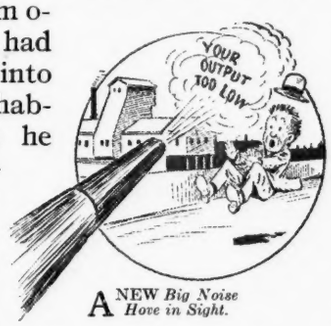
COAL AGE

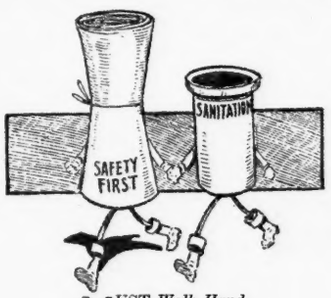
Vol. 7 NEW YORK, JANUARY 30, 1915 No. 5

The Fable of the "Supe" and the New "Big Noise"

Once upon a time there dwelt in a mining camp a supe who posed as the "chief squeeze" around that dump, and inasmuch as he had for many moons deftly extracted from the coffers of the company his stipulated number of simoleons, it had grown into such a habit that he had entirely lost sight of the value-received part of the bargain. As a picture of contentment, he had everybody backed up against the wall and gasping for breath.



A NEW *Big Noise Hove in Sight.*



MUST *Walk Hand in Hand.*

AT *the Temple of Wisdom.*

And it came to pass that a New Big Noise—a 42-centimeter—hove in sight, cast anchor and trained batteries on the supe. Could he believe his ears; the first discharge sounded like this: "Your output too low; your cost too high; your camp the bummest burg I have seen in a decade. Get busy; come across with some reasons why."

With his first line of fortifications all shot to pieces without a return volley, the dismayed supe fell back on the inner works and pulled off something in a wee small voice that sounded like: "Located too far from town; labor scarce."

"Labor scarce! Ha! Ha!" boomed the 42-centimeter. "Know ye not, oh many times mistaken supe, that the modern miner stayeth not where the turn runneth slow. Verily, also, must there be education for his children; physical and moral welfare work must prevail; sanitation and safety first must walk hand in hand. You are in a rut. Come out of it, for verily I say unto you not one amongst ye hath a strangle hold on his job. Your looks seemeth that of a man sick almost unto death — a vacation for you. Brush up; remodel yourself. Get a death grip on some late and imported wisdom lest very much worse things befall thee."

Wearied with his long journey the supe approached the Temple of Wisdom, made deep obeisance to the high priest of knowledge who presided there, and spake with feeling:

"Oh, most wise and beneficent sage, greatly am I troubled. My new boss findeth much fault with me. Verily have I lost my grip.

"I must show a complete reversal of form, and 'then some' in the very near and immediate future, for trouble and disgrace dog my footsteps. I fain would acquire knowledge, and would learn the way."

"Son," quoth the sage, "return ye to your own country for knowledge lies not far distant. Seek ye your mining journals that have accumulated with wrappers undisturbed for weeks and months. Read carefully and profit thereby.

"Drink to the full of this fountain of facts, for therein lie the fruits of ripe experience, which is true wisdom."

—By C. P. Shockley.

Moral:

OPPORTUNITY *is on your trail; duck or he will catch you.*

The Main Island Creek Coal Co.'s No. 4 Tipple

By H. Reisser*

SYNOPSIS—Details of a modern steel tipple having three kick-back dumps and an elaborate arrangement of screens. The mine has four drift openings. Method of disposing of refuse. Drives are started and stopped automatically.

Situated at Omar, on the Guyandotte Valley Branch of the Chesapeake & Ohio R.R., about 9 miles from Logan, in Logan County, this tipple was recently completed.

The Main Island Creek Coal Co., although comparatively new, has one of the largest tracts of rich coal lands in the Logan district, and is increasing its tonnage rapidly. The No. 4 tipple has one of the largest capacities of any such plant so far started. The coal seam, which lies some 75 ft. above the elevation of the railroad tracks, is the famous Island Creek bed. It is 8 ft. thick, has few impurities, makes blocky coal, and is used both for domestic and stoking purposes.

Four drift openings have been driven into the seam at various points, all of which lead to the head house at coal elevation. Mine cars are brought from these openings to the dumping points with electric locomotives in 30-car trips.

The plant was designed and built by the Link-Belt Co., of Philadelphia, Chicago and Indianapolis, and following the general modern trend in bituminous-coal-preparing plants, the tipple and other buildings were made of structural steel and covered with corrugated iron, placing wood only as walks, stairways, etc., making the structures practically fireproof.

The plant is divided into three units: The head house, the conveyor and picking house, and the screening house.

The head house covers the three kick-back dumps, a 15-ton steel dump hopper and an apron feeder.

Equipment in the Head House

The apron feeder is made up of a standard Link-Belt corrugated apron mounted on two strands of steel-bushed roller chain traveling on angle tracks. At the end of this feeder, the coal discharges over a lip-screen discharge chute which removes all the "fines" and deposits same on the bottom of the apron conveyor. This feeder is driven by a chain receiving its power from the foot shaft of the apron conveyor down hill. A structural steel frame, mounted on concrete, supports the machine.

Showing Pickers at Work in the Conveyor House

The Conveyor and Picking House

The picking house covers the 72-in. wide corrugated apron mounted on two strands of steel-bushed roller chain, which move down to the elevation of the shaking screens. The upper end is pitched downward at 30 deg., and at the lower end it becomes horizontal, giving the

*Engineer, Link-Belt Co., Philadelphia, Penn.

pickers a chance to remove refuse from the coal. This refuse is all in the larger sizes, so that it is easy to detect. The refuse and slate are disposed of by means of boxes at the table sides handy to the pickers which empty into one common refuse bin placed directly under the picking floor and discharged by a standard Link-Belt undercut gate into side-dump cars, which in turn deposit their load on the hillside.

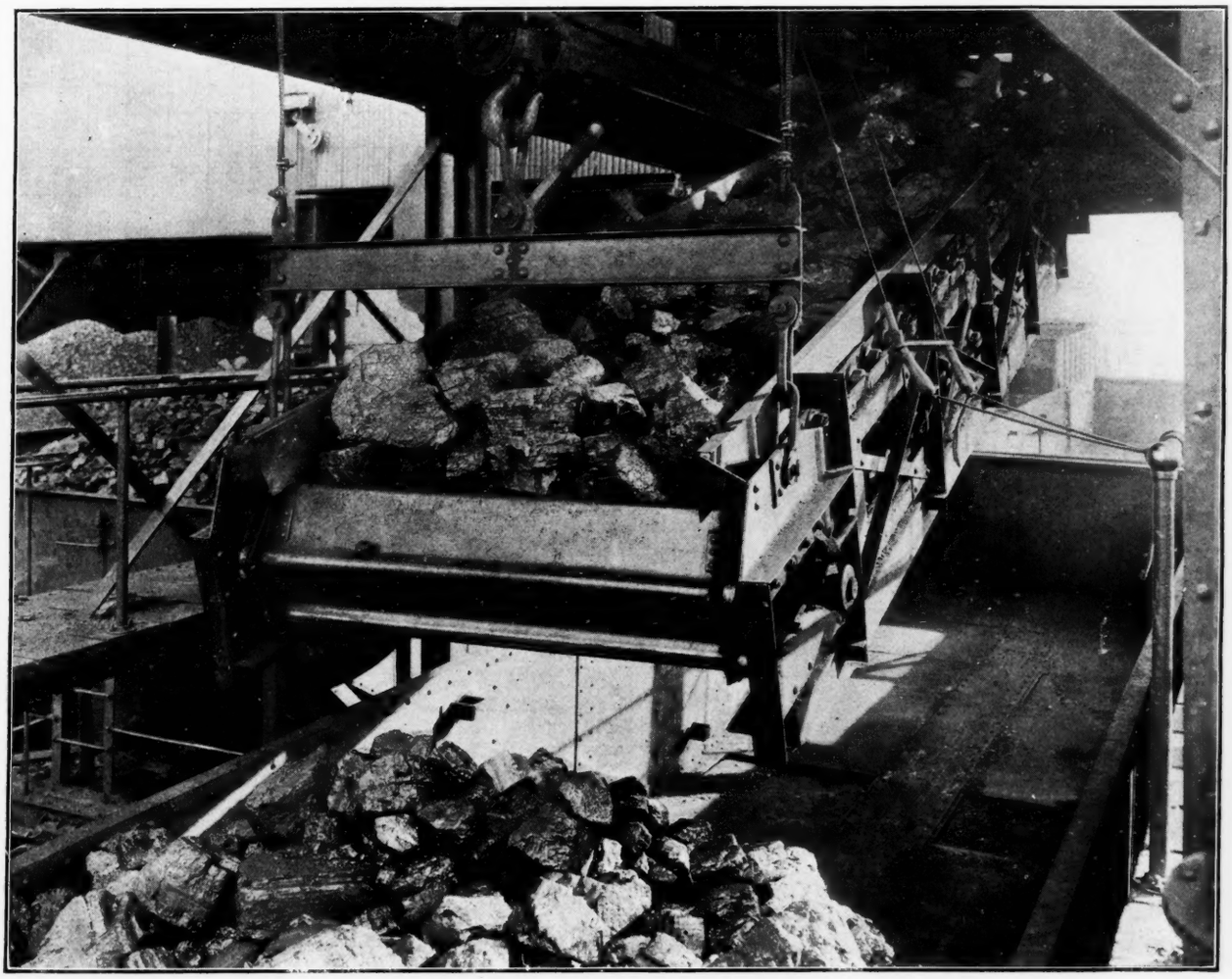
The Screening House

The screen house covers the shaking screens, chutes and lump-loading boom. The 72-in. wide corrugated apron conveyor before mentioned discharges over a ¾-in. perforated chute provided with a fly-valve. This chute when closed supplies boiler fuel, which is carried to the power house by side-dump cars; the remaining coal is discharged onto the shaking screens.

The hopper receiving this coal is designed with two compartments, the bottom of the main hopper being equipped with a bar screen to allow the fine coal going through the perforated screen in the discharge chute above the screens, into the boiler fuel bin. The main hopper is utilized for either slack (when making screened coal) or run-of-mine. The flow of coal at the discharge over the track is controlled by a standard Link-Belt undercut gate and adjustable end chute.

Shaking Screens

The shaking screens are of the usual rugged type, suspended in tandem with adjustable forged-steel hanger rods, 8 ft. wide, and prepare the coal in sizes, namely: Lump over a 4-in. screen on the outside track, egg over 1¾-in. screens on the middle track, and slack on the inside track. To accomplish these requirements, patented flanged-lip screens are employed, these being a decided improvement over the heretofore used perforated plate screens, due to the former having slotted taper holes to prevent clogging of slivers and to the fact that every 12 in. the coal is turned.



View of Boom Topping Off a Lump Car

To make 4-in. run-of-mine, the upper screen is arranged with a removable one-piece rail, raised and lowered by hand winches, bolted to the screen itself when in use, and suspended over it when idle. This method has entirely eliminated the leakage of very fine coal, which is an annoying feature in screening plants, and the veil now forms an integral part of the screen when it is fastened to same.

The upper screen removes the product under 1¾ in., the same falling into the above mentioned combination slack and run-of-mine hopper. The lower screen removes the product over 1¾ in. and under 4 in., which passes into a shaking and attached gathering hopper from

which it passes into curved adjustable chutes with extensions for low cars, controlled and operated by ropes and winches. The product over 4 in. size passes onto the lump-loading boom.

The screens are driven through ball-and-socket eccentrics and wooden rods to the eccentric shafts on which is placed a heavy flywheel pulley which counteracts any unbalanced motion of the screen. A belt drive connects this shaft to the common countershaft of the main drive.

The eccentric shaft is supported on an independent structural steel frame, which is designed in the form of an "A," and takes all the vibrations of the screens directly to the foundation, thus insuring rigidity and long life for the balance of the structure.

The Drives

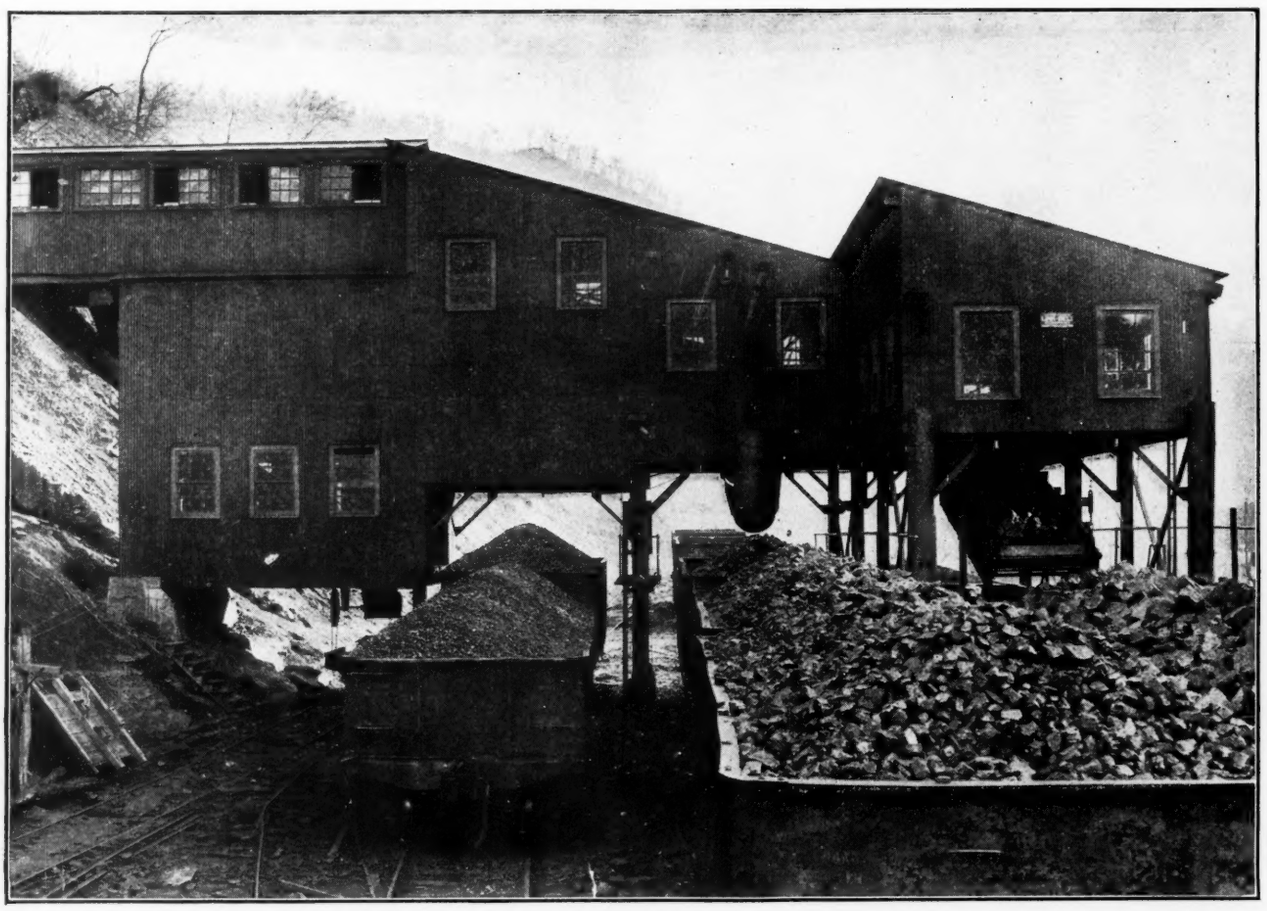
The drive for both the down-hill conveyor and the shaking screens is located directly under the discharge point of the conveyor, which through countershafts, cast and cut-spur gears and belt drives lead to the common countershaft, on which are located friction clutches, pulley, etc., so that one or both units can be stopped and started at will.

To eliminate electric troubles, two 50-hp. motors are used to drive both units which are located in the same arc of radius so that in case one breaks down it is only a matter of a minute or two to change the belt to the remaining motor.

Automatic starting and stopping push-button stations are located in different points of the tipple. Such stations are located in the head house on top, the picking house, and at the loading tracks below, allowing the motors to be stopped at the several points in case of trouble. The plan provides that motors can only be started from the point where they were stopped.

The Loading Boom

For the loading boom, a moving corrugated apron is again employed, constructed of the same style and type as described for the apron feeder and down-hill conveyor.



A Close View of the Sized Coal Made at the Tipple

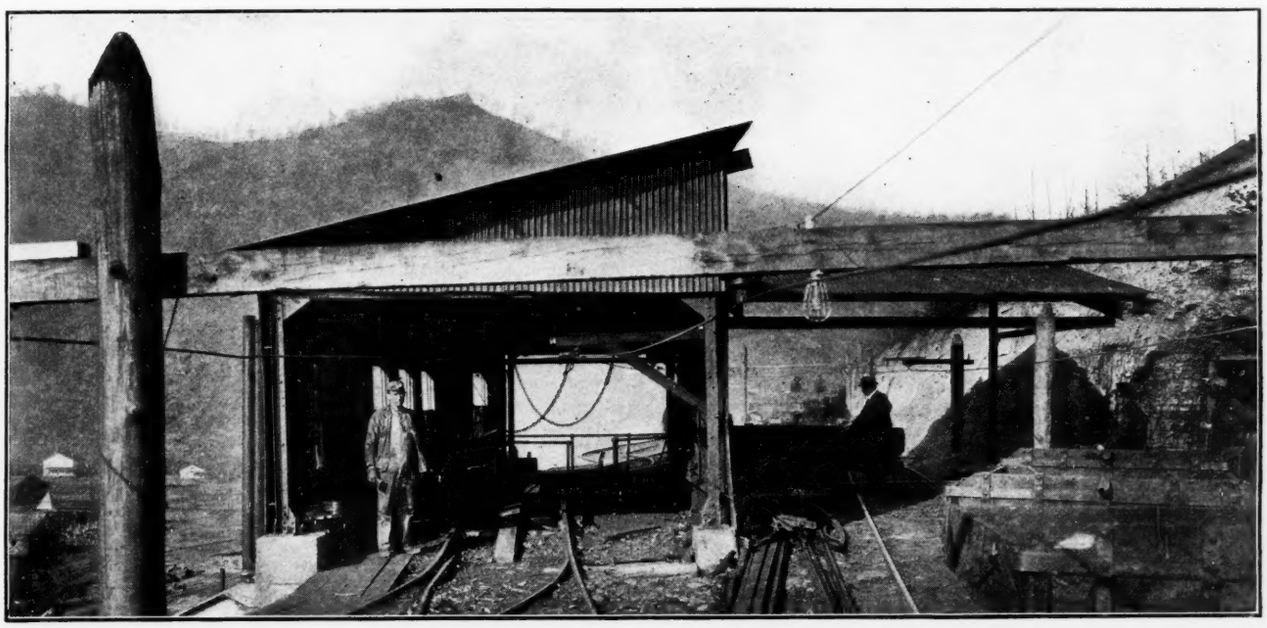
It is moved on a short fixed horizontal steel frame, to the end of which is fastened the boom itself. A self-contained structural steel frame is the means of providing guides on which the apron moves, carrying the coal to within 6 in. of the bottom of the railroad car. The raising and lowering of the boom are accomplished with a 3-ton electric hoist, insulated, which insures quick action, and in turn few delays in loading the cars. The machine is driven through a countershaft, cast- and cut-spur gears, belt drive to 5-hp. motor and can be stopped and started at will by friction clutches.

In the design of the buildings, columns of the Bethlehem section were used wherever possible, making it an easy matter to repaint same, allowing no accumulation of the fine dust in inaccessible corners, etc., for such dust appears to have a strong corroding action on structural steelwork in general.

Trimmers' walks at the car sides are provided at all

available points to give both the loaders and the car handlers ample means of going from place to place quickly, and throughout the entire equipment an abundance of light (both natural and artificial), walks and stairways are noticed.

The officers of the company are John Laing, president (former chief of the Department of Mines, West Virginia); A. J. Dalton, general manager; R. F. Carson, chief engineer; John A. Kelly, assistant superintendent, and O. O. Cooper, secretary and treasurer. The directors of the company are: Messrs. Clinton Crane, J. O. Cole, R. G. Huffard, Enoch Smith, L. E. Johnson, O. O. Cooper, J. E. Cox, James Dinet, W. A. Brown, J. F. Johnson, and James Prince.



THE HEAD HOUSE AND DUMPS

Sprinkler Systems for Wooden Breakers

Sprinkler systems that can be turned on by hand from outside the buildings are being installed in 14 of the wooden anthracite breakers of the Lehigh Valley Coal Co. and installations in two more are planned. Four of the breakers have already been equipped, and 10 are under way. At recent tests of these new systems before a Committee of the Underwriters' Association of the State of Pennsylvania, the Committee agreed to recommend a substantial reduction in the high rate of insurance now in force on these wooden breakers for buildings thus equipped.

It is almost impossible to enter a breaker which has caught fire. The conflagration is quick and hot, fed by the coal and the numerous drafts throughout the immense open structure. The new sprinkler systems consist of pipes 10 or 15 ft. apart with nozzles pointing upward at equal intervals which dash the water against concave circles of metal causing it to spread out in umbrella shape as it falls to the floor. The nozzles are so placed that the falls of water will overlap and cover the entire breaker building.

This system will throw 800 to 3000 gal. of water a minute, a quantity equal to from one to four fire hose throwing 750 gal. a minute. It will extinguish any small fire and prevent one that has gained headway from spreading further. Wooden breakers are extremely inflammable and a number of them have been burned to the ground. This involves not only a replacement cost of from $150,000 to $200,000, but the loss from the fact that no coal can be mined for many months from the shafts that feed the breaker, as the means of preparing the coal for market have been destroyed. These new systems supplement but do not replace any of the regular fire-fighting apparatus installed in every breaker, such as hose, standpipes, fire pails, sand pails, water barrels and hand grenades.

A Rapid Growth

An instance of the difference between efficient centralized management and that which is distributed and necessarily less efficient is coming to light in the case of the Sacandaga Coal Co. This company bought its first piece of property in March, 1913. It now has 600 acres of coal land and two miles of narrow-gage railway connecting up the properties in Mayfield and Carbondale. The annual output of the properties which the Sacandaga company acquired was a scant 30,000 tons. The work of the company is still in the development stage, but it has two breakers, Sacandaga No. 1 and Sacandaga No. 3, with a capacity of 250,000 tons a year. The output this year is expected to be 150,000 tons and by the end of 1916 the breakers are expected to be running at full capacity. This instance tends to prove that the efficient administration of coal lands has as much to do with success as advantageous location and easy mining.

Experiments made in France have shown that 10 per cent. more weight of briquets can be stored in a given space than of lump coal.

Mine Tracks

By Sheldon Smillie*

SYNOPSIS—Mechanical mine haulage is in reality a miniature railroad system and should be treated as such. Bonding, ballast and other details are all essential to satisfactory operation.

Mechanical haulage, particularly electrical, has been installed by many managers because they were told it was cheaper than the old system. They probably did not realize that they were constructing a miniature industrial railroad which should be treated as such. How many of these managers will tell you of armature troubles, bearings, tires, etc., which are making their lives shorter.

Tracks should be as straight as possible. There is no reason why they cannot be laid to the same sights upon which the entry is driven, and not made to go around every little knob the cutters leave. They should be laid evenly, the ties being tamped up to the rail, not the rail drawn down to the ties.

Heavy rails are desirable because they bend less easily and offer a greater surface to the tires. Most locomotive makers recommend a certain size of rail to be used with a certain weight of machine. This rail sustains the locomotive when the ties are spaced 2-ft. centers.

Tracks should be kept clean down to the ties. How many mines one has been in where there is a mound between the two rails, possibly scored in the center by the brake rods of the locomotive, the flanges of the wheels making a groove along the rail with water running over the same in spots and down these grooves. Dirt increases the resistance of the cars and holds the moisture on the rail, necessitating sanding. The sand in its turn piles up around the rail, making matters worse. Tracks are easily kept clean when frequently attended to and the cleaning generally pays for itself in decreased boiler coal.

The grade of the main haulage should be watched carefully. A short piece of adverse grade will limit the capacity of the locomotive. The work of leveling up will be more than paid for by the increased number of cars hauled per trip.

Locomotives are designed to pull a certain load at a certain speed over the average grades in the purchaser's mines with allowances for short stretches of maximum grade. These data are usually furnished the manufacturer by the engineering department, which usually forgets to furnish the mine foreman with the same figures also. The result is that when the machine arrives it is set the task of hauling the coal out of the dip, the motorman adding cars until he can just crawl over the hump while piling sand on the tracks.

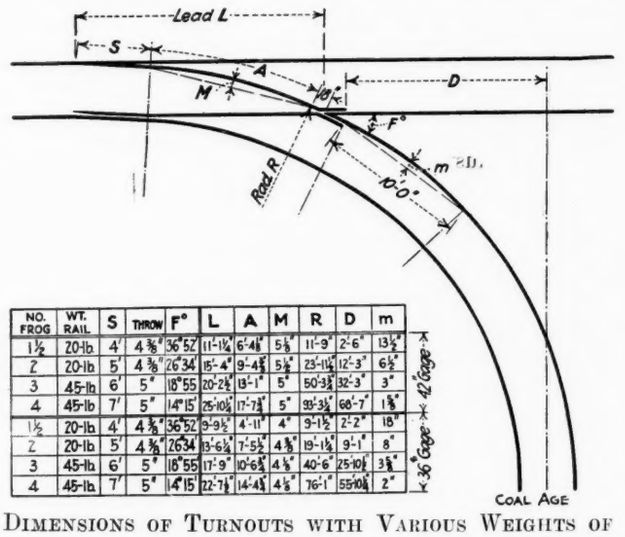
He would have saved time by making an extra trip or two at the capacity designed and the mine foreman would not call up the general manager in a few days and report, "That new Jordan locomotive is no d—— good. Order us a set of armature coils, a set of brushes and controller fingers and segments. Yes, and get some resistance grids too."

With the proper load and dry tracks, no sand should be required except on starting. Sand increases the resistance to the return current, and where much of it is used it frequently gets spilled all over the top of the locomotive and works down into the bearings, particularly the journal boxes, cutting them rapidly.

My experience has been that most motormen sand vigorously, thinking to gain speed thereby, when the trouble is actually too steep a grade for the load. A little grit is all that should be necessary and my opinion is that a number of companies could substitute a cheap river or bank sand and find that they use no more of it than the more expensive siliceous or glass sands.

Low voltage is probably the cause of most electric-locomotive troubles, and while this may be caused by remoteness and too small a feeder, the trouble can usually be found in the rail bonding. Rail bonds are the most important and most neglected feature of electric haulage. Almost every electrician has his opinion as to the best kind of bond and every maker has his "pet" pattern, but I believe the short, flexible, concealed type properly pressed into a freshly reamed hole is the best. To secure first-class results the fishplate should be tight and the joint supported by a well tamped tie under the end of each rail and under the fishplate.

Joints should be inspected with a bond tester every two weeks. A few defective ones will be found and the trackmen will soon learn the cause of failure and use more care in putting in the new ones.



NO. FROG	WT. RAIL	S	THROW	F°	L	A	M	R	D	m
1½	20-lb	4′	4 3/8″	36°52′	11′-1¼″	6′-4⅛″	5⅛″	11′-9″	2′-6″	13½″
2	20-lb	5′	4 3/8″	26°34′	15′-4″	9′-4⅝″	5⅛″	23′-11¾″	12′-3″	6½″
3	45-lb	6′	5″	18°55′	20′-2½″	13′-1″	5″	50′-3⅜″	32′-3″	3″
4	45-lb	7′	5″	14°15′	25′-10⅛″	17′-7⅛″	5″	93′-3¾″	66′-7″	1⅝″
1½	20-lb	4′	4 3/8″	36°52′	9′-9½″	4′-11″	4″	9′-1½″	2′-2″	18″
2	20-lb	5′	4 3/8″	26°34′	13′-6¼″	7′-5½″	4⅜″	19′-1⅛″	9′-1″	8″
3	45-lb	6′	5″	18°55′	17′-9″	10′-6⅝″	4⅛″	40′-6″	25′-10⅛″	3⅜″
4	45-lb	7′	5″	14°15′	22′-7⅛″	14′-4⅜″	4⅛″	76′-1″	55′-10⅛″	2″

Dimensions of Turnouts with Various Weights of Rail on 36- and 42-In. Gages

A good method of getting a general idea of the condition of the bonds is to figure the feeder resistance and consequent drop in voltage due thereto to some remote corner of the mine, and then measure the actual drop at that point between feeder and rail. The difference between figured loss and actual is the approximate loss due to the resistance of the return. This will usually be many times that of the feeder.

It is a poor scheme to bond over to the water or air pipe with a view of using that as a return, as the varying resistance of pipe and track will keep the return current constantly passing from one to the other and back

*Division engineer, Rochester & Pittsburgh Coal & Iron Co., Indiana, Penn.

again, causing electrolysis and early destruction of the pipe. The best thing I have found where the tracks are in poor shape is to get an old haulage rope and lay it along the rib grounding over to it at frequent intervals.

One of the quickest things to upset the regular routine of a mine and get the miners disgusted and ready to quit is to have the cars going off the track continually. Poor track laying is the cause of a good deal of trouble, but poor switches cause the majority of accidents. Herewith I give an original table calculated especially for underground conditions and for the frogs most usually employed. Small variations may be made from these figures without materially affecting the operation. The distance *D* is from the heel of the frog to the center line of the track at right angles to the main haulage on a curve equal to that of the turnout. It is the distance that the frog should be set back of the center line of the cross-entry or room. The middle ordinate of a 10-ft. chord of the outer rail of this curve is designated as *M*.

Curves should be banked in mines as well as on any surface line and for the same reason.

Time will often be saved by providing a regular switch stand with ground light showing which way the switch is thrown. A light should also be turned by the same motion in the side entry so that the motorman on a trip coming out will be able to see without stopping whether another trip has been by and thrown the switch while he was inside.

Legal, Legislative and Labor Developments during 1914

By A. T. Shurick

SYNOPSIS—Supplementing the article in our Jan. 9 issue, on "Coal Markets and Business Aspects of the Fuel Industry in 1914," we give herewith a brief sketch of principal legal and labor developments of the year.

The Ohio Anti-Screen Law—Among the important legislation of the year, a period which, by the way, stands forth as one singularly replete with drastic lawmaking of all kinds, the enactment of the Ohio Anti-Screen Law is particularly important, and proved a crushing blow to the coal industry of that state. In the face of a most earnest protest from the operating interests, substantiated, it might be said, by irrefutable figures as to the ultimate results, Governor Cox and his radical following stubbornly persisted in their efforts, until the measure finally became a statute.

As was only to be expected, the constitutionality of the law was immediately questioned by the operators, and the matter hurried through the lower courts in order to obtain a decision from the Supreme Court as soon as possible. This latter tribunal at first sustained the law, but later withdrew its decision, and the matter was still in question at the end of the year.

The Hard Coalers—A continuation of the Government's proceedings against the alleged anthracite trust was a feature in the judicial circles during the year. The Department of Justice is now approaching this problem along new lines; it proposes to amend the National statutes in such a way that its actions may be carried to a successful conclusion. The very persistence which the Government is exhibiting in the prosecution of this suit tends to convince one that it is based upon substantial and well grounded reasons, and if it is successful in establishing its case, this combination should be dissolved. It must be remembered, however, that Judge Gray, in the United States Court at Philadelphia, found that no such combination existed, and his decision was later affirmed by the Supreme Court.

It is interesting to note in this connection, the inconsistencies of some of the statutes in effect in this country. Half a century ago, Pennsylvania enacted a law making it mandatory on the railroads of the state to assist in the development of the coal industry, whereas the present federal laws direct entirely to the contrary. In 1874 a change was proposed in the state constitution, but it was never put into effect and is still operative to this day.

The Anthracite Rate to Philadelphia—Among the several important decisions that marked the year's end, the heavy cut in the anthracite freight rate to Philadelphia stands out as one of the most drastic of the year. The decision was handed down by the Pennsylvania State Commission, whose jurisdiction, of course, covers the rate to Philadelphia, but not to outside points. The reduction was quite heavy, being 40c. per ton on all sizes above pea coal and scaling down to 20c. per ton on the smaller grades.

The decision is apparently based on the rather illogical hypothesis of a comparison with the New York rate, the haul to the latter point being longer and it being assumed, therefore, that the rate to Philadelphia should not in any event exceed that to New York. The Interstate Commerce Commission has long since proved the fallacy of arriving at an equitable rate by such means, and it is disappointing to find one of the state tribunals reverting to such methods which can only serve to excite the popular fancy of the ill-informed.

The Clayton Bill—The enactment of the so called Clayton anti-trust bill on Oct. 15 marked the end of a great deal of exaggerated comment and unnecessary alarm. Organized labor claimed that the passage of this law brought them relief in certain directions that they had long been striving for. While it is generally agreed that the wording and phraseology of the act are so confused in certain instances as to raise some doubt regarding just what interpretation may put upon it, there are conservative and authoritative attorneys who state that the claims of the labor parties are entirely exaggerated.

In fact, instead of exemption from the provisions of the Sherman law, the new act considerably enlarges the scope by which private individuals may bring action for violations of its provisions; thus, the right of triple damages for any injury as provided in the Sherman act is emphasized particularly in the fourth section of the Clay-

ton act. However, should it so develop that the new law does not meet with the expectations of the labor party, it is, of course, only a question of time until they resume aggressive steps to gain this end.

The Five per Cent. Freight Rate—Among the constructive elements in the country's business affairs, the granting of the 5 per cent. rate increase to the Eastern roads, toward the close of the year, stands out prominently. Unfortunately, this was so long delayed that the practical benefits to the roads are inconsiderable, but the general tone of the decision was so eminently encouraging that it may ultimately prove a potent stimulus. Thus, the scope of the rates was extended beyond the territory of the roads making the application, while a close study of the report leads one to the conclusion that even more than the allotted 5 per cent. increase might have been granted in certain instances had it been requested. This change of sentiment and principle in which the commission at last recognizes the necessity of concessions for "the common weal," seems to be the most hopeful note yet sounded by the new administration.

The Government vs. the Lehigh Valley—The decision rendered by Federal Judge Hough, in the Government's dissolution proceedings against the Lehigh Valley Railroad Co., was quite favorably interpreted by the large business interests, though the Government has so consistently failed in suits of this nature that the results were already largely discounted. The action embraced no unusual features of any kind, the charge being an attempt to monopolize interstate commerce, and the transporting of anthracite coal in violation of the commodity clause of the Hepburn law. The Government appealed the case and it will be carried into the Supreme Court.

The Pennsylvania State Tax on Anthracite—In the case of the Pennsylvania State tax on anthracite coal, there were some 16 appeals taken to this ruling during 1913, but the case did not come up for trial. The operators are attacking the constitutionality of the law on several grounds, the principal ones of which are: That the tax is a special tax, and therefore not uniformly applied as required by the law; that the distribution of the revenues from the tax are not legal, and that it is unfair to impose a burden upon the steam sizes of anthracite to which the bituminous coals, with which they are in competition, are not subjected. The principle involved in this controversy is one of considerable importance, since it will establish a precedent by which all such questions of this character will be decided.

In Labor Circles

A period of depression such as has characterized the country during the past 12 months inevitably works to the discomfiture of the labor unions. Such has been the case during the past year to even more than the usual extent, and this in spite of the fact that the National administration has shown a pronounced sympathy with the labor parties and has exerted its best efforts to assist them in every way.

By far the most important development in the labor history of the country for the year was the culmination of the Colorado strike in what cannot be interpreted as other than a crushing defeat to organized labor. International Vice-President Hayes of the United Mine Workers of America is on record with the statement "That the Union had spent $3,044,000 on the strike," and it will go down in history as one of the best organized and most determined attempts of this organization to unionize an "open-shop" district. Conservative estimates place the loss in life at 66 and the gross monetary consideration at approximately $18,000,000. Through the connection of the Rockefeller interest with the Colorado Fuel & Iron Co., the opportunity to involve the already muchly abused Standard Oil Co. in the fracas was eagerly seized upon. Demonstrations in the shape of "mourner's parades" occurred in different parts of the country, notably New York, which did much to create an unsavory and prejudicial publicity to the operating interests.

New Agreements Not Satisfactory

Undoubtedly one of the main reasons for the collapse of the Colorado strike was the unsatisfactory results obtained in the new agreements negotiated in the Eastern bituminous fields, Apr. 1. The expiration of the old wage scales found the operators in an unusually strong position with the markets flat and completely devoid of interest; coal could scarcely be moved at any figure, nor did the future hold out promising hopes for much improvement. The producers were so obviously determined to close down their mines rather than concede the customary advances that the miners concentrated their efforts on a very few districts.

Thus, instead of uniform scales being arranged at the different main conventions, these broke up in complete disagreement, and the matter was taken up by sub-districts. In Illinois and Indiana agreements were effected without any great trouble, and the same was true in Pennsylvania, with the exception of a very few districts where the negotiations were more or less spirited for a time. But with the pronounced surplus of Southern coals in the market it was not to be expected that the suspension in the central Pennsylvania district could long endure. As a matter of fact, the "suspension" was at no time taken seriously, the miners good naturedly consenting to work whenever the operators really required tonnage.

But in Ohio, the enactment of the Green anti-screen law so confused the situation that the operators experienced great difficulty in reaching an agreement, and the close of the year found the situation in the No. 8 district becoming more and more acute, and replete with grave possibilities. The demand was made for a basing rate of 47c. per ton for machine mining, with no provision for lump coal. This was accepted by the Hocking operators, to whom it meant a slight reduction in the cost of mining, and the Cambridge producers were also forced to accede to the demand because of the large contracts they had on hand, but the No. 8 operators steadfastly refused to consider any such rate. Thus a new scale was reached in some of the more important districts, but sections aggregating perhaps one-half the gross tonnage of the state were still out at the close of the year.

The enormous expenditures of the miners' organization in Colorado also interfered with the payment of benefits to the idle union men in Ohio during the early part of the suspension and considerable dissatisfaction was reported from many of the mining districts; this situation was somewhat relieved by modest donations toward the close of the year, but the miners have reached a point where their leaders are holding them in line with the greatest difficulty, and there are well defined rumors of internal dissension in the organization.

A New Rotary Air Compressor

A new air-cooled rotary air compressor has just been placed on the market by the Wernicke-Hatcher Pump Co. of Grand Rapids, Mich. A machine of this type, weighing 1400 lb., and being 46 in. long, 28 in. wide and 35 in. high, operating at 400 r.p.m., delivers about 75 cu.ft. of air per minute at 100 lb. gage pressure.

The machine, which may be built for either belt drive or direct connection to a motor, consists essentially of two elements, a rotor and a rotor casing, both of which revolve in the same direction and at the same speed, but upon independent shafts, which are eccentric to each other. At suitable intervals, plates or vanes extend radially from the surface of the rotor, fitting into slots in the casing and case head, and dividing the displacement of the compressor into independent pockets. These plates are pivoted to shoes which are so arranged as to slide on the surface of the rotor.

The plates or vanes slide back and forth in the slots, but as the elements rotate in the same direction, this movement is relatively slow. This permits a close fit on the side walls, and as the pressure in the leading pockets during compression is always greater than in the pockets behind, the plates are pressed against the faces of the slot, causing little or no leakage to the chambers of lower pressure. Through one-half of the revolution, each pocket is expanding and drawing in air; through the other half, it is contracting in volume and discharges the air when the latter has reached the pressure of the receiver.

With eight pockets, there is practically a continuous compression, the periods of operation overlapping each other, so that the air is discharged practically uniformly at the desired pressure. This gives a uniform torque on the drive shaft, and as the machine is equipped with roller bearings, the friction is low. The cooling surface is afforded by the rotary casing. In proportion to

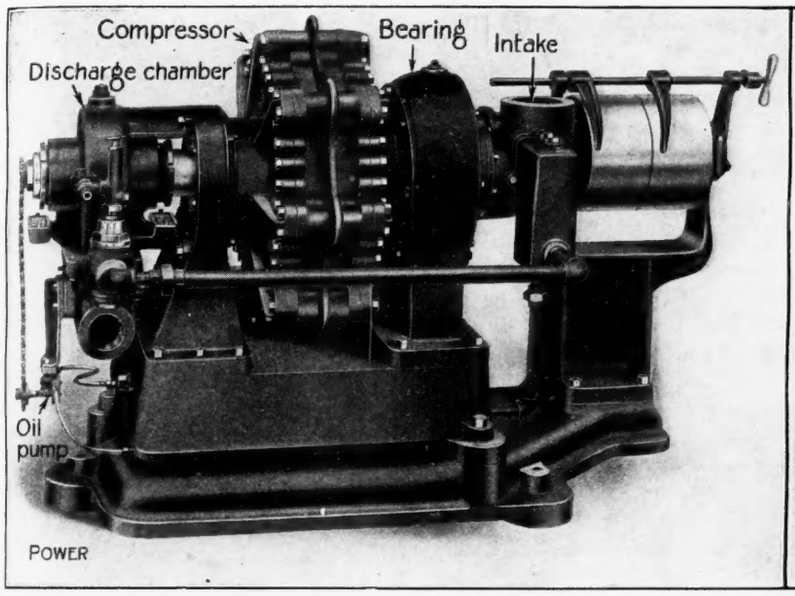


FIG. 1. WERNICKE-HATCHER SINGLE-STAGE ROTARY AIR COMPRESSOR

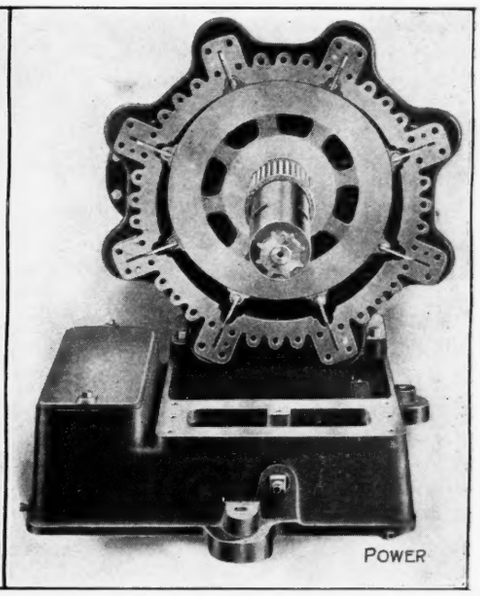


FIG. 2. DISCHARGE END WITH REAR BEARING BRACKET AND CASE HEAD REMOVED

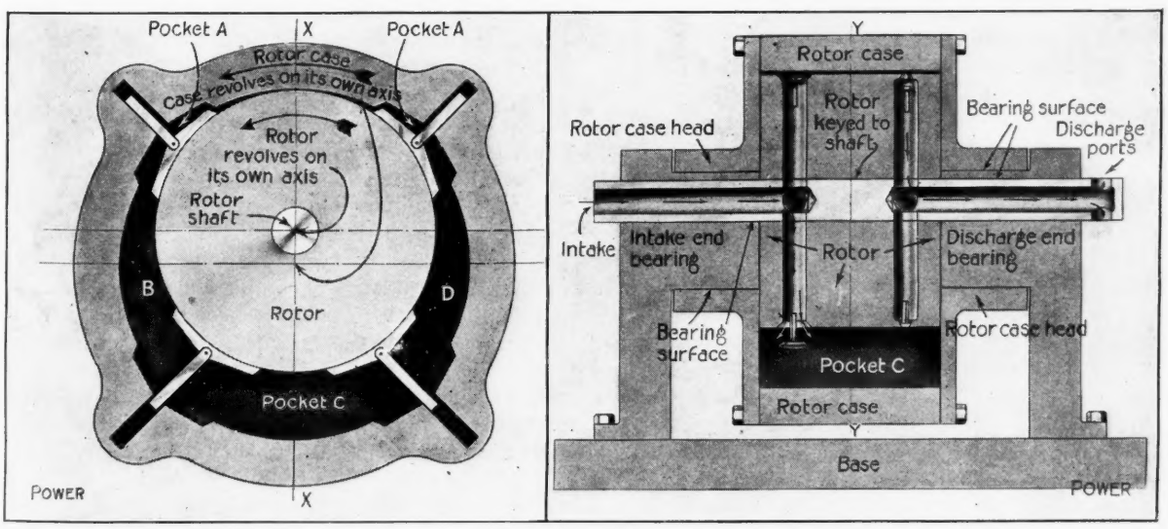


FIG. 3. END AND SIDE SECTIONAL VIEWS, SHOWING POSITIONS TAKEN BY THE ELEMENTS

the volume of air compressed, this surface is unusually large, nor is it contracted during compression.

On this account, much of the heat generated is immediately radiated, and on an all-day run, it is reported that the temperature will not exceed 300 deg. F. Water cooling is consequently unnecessary.

Each pocket of the machine is provided with an intake and discharge valve. These are of the ordinary poppet type, and connect through suitable passages with the intake and discharge openings located at opposite ends of the hollow rotor shaft. The intake valves are mechanically operated by a stationary cam, while the discharge valves are automatic. A suitable unloader protects the machine, and allows it to run idle except when air is being used.

Extracts from a Superintendent's Diary

Occasionally a derelict drifts into our camp and attempts to find anchorage. The attempt is generally successful.

We buried such a one today.

Although Tom James has lived in our midst almost a year, it required his death to make us realize that we do not know a single fact in regard to his personal history previous to his arrival in our community.

Every man who has been associated with him in any way has been questioned and we find no clew to help us to discover possible relatives or friends, and so we were obliged to bury him without notifying kith or kin. To them his fate will probably forever remain a mystery.

When he applied for a check number, on first going to work, he remarked to our timekeeper, grinning pleasantly the while, that Tom James might be his name, which leaves little room to doubt that we do not even know his name.

And yet in spite of these facts, as I now recall the incidents of the past year, this man's personality has left an indelible impression with me. Truly! "what is in a name?"

The mystery surrounding his early life, which has just now become common gossip, has been greatly emphasized by the incident which was responsible for his death.

The faithful ladies of our only church decided upon a box supper as a possible means of raising funds with which to purchase some much needed seats.

The popularity of the affair exceeded their expectations, and it soon became evident that more chairs were required to take care of the people. Tom being janitor of the church (a position which carried no salary or perquisites, and at times not even a "thank you, sir," for his pains) was asked to go over to my office and request the loan of a few chairs; the ladies knew that I could be found at my office because my wife happened to be one of the ladies, and she had left me at the office, under protest, to worry over some unsatisfactory cost sheets.

Tom informed me of his mission, and obtaining my consent, proceeded to dust off a few chairs. On one of these, he happened to notice an open copy of a weekly. On it was a picture of a gay youth dining with a "painted lady," at a table well supplied with lobster and wine. The youth was pictured as smoking and the smoke from his cigarette had formed a cloud, and in the cloud appeared (to the youth) a vision of a country maiden sitting at a table with bowed head. The title of the picture was "Waiting."

I noticed that the picture seemed to take possession of Tom but I could not realize what it would lead to. He left my office carrying the chair on which he had discovered the weekly and the picture was still lying on the chair seat undisturbed.

He never got back to the scene of the supper.

Between my office and the dwelling houses, the road follows along a sheer precipice and Tom's body was found at the foot of this precipice at daylight the next morning.

He still clung to the chair although its legs, like his, were terribly splintered.

The derelict had sighted land and then in the twinkling of an eye sank forever.

And yet some people insist that fate is a myth.

Explosions in Flour Mills

Surely some consideration of methods pertaining to the prevention of dust explosions is called for. It has already developed from laboratory study that most, if not all, grain dusts are more inflammable than standard coal dust. Grain dusts in most cases develop higher pressures on explosion, especially at the lower temperatures. The preliminary observations seem to indicate that the dusts from oats and yellow corn are more inflammable than those from wheat and other grain.

The investigations of the Millers' Committee indicate a difference in the inflammability of dried and undried dusts. In nearly every case the pressure developed on explosion was increased appreciably after drying. The result of a decrease in the humidity of the air is thus suggested.

Various causes have been assigned to the many explosions in milling plants in this country and abroad, among them the use of open lights, or naked flames, such as lamps, torches, gas jets, lanterns, candles, matches, etc.; property fires; introduction of foreign materials in grinding machines; electric sparks from motors, fuses, switches, and lighting systems, and static electricity produced by friction of pulleys and belts, grinding machines, etc.

The field-engineering inquiries of the Buffalo investigators indicate that a large number of the recent explosions and fires have been caused by the introduction of foreign material into grinding machines. A possible means of prevention would be some system by which foreign material might be removed before it reached the mill. For the present, it is recommended that prevention of explosions may be assisted by complete electric-lighting systems and the use of portable electric lamps instead of lanterns or naked lights.

The Committee also advises that the receiving bins from the grinding machines be as small as the operations permit, as increased size gives increased space for dust clouds, and, therefore, opportunity for a more violent and destructive explosion.—*"The Journal of the American Medical Association."*

According to the Millers' Committee of Buffalo, in 13 explosions which have occurred in grain mills in recent years, 78 men were killed and 119 injured. The damage to property exceeded $2,000,000. In four explosions in Europe since 1911—two in dextrin works, one in a provender mill grinding peas, beans and wheat, and one in a linseed mill—there were 47 killed and 119 injured.

Some New Electrical Mining Apparatus

Of all the senses with which animate creation is endowed, that of sight is probably of the most benefit. It is the sense which is employed the most continuously to direct the movements of both man and beast. Unfortunately, however, the eye can receive no impression and transmit it to the brain in the absence of a greater or lesser amount of light. Without light the sense of sight is useless.

Those who have attempted to travel even a well known passage through the mines without the aid of light of some kind, can appreciate how nearly perfect and absolute

THE ELECTRIC MULE LAMP IN POSITION

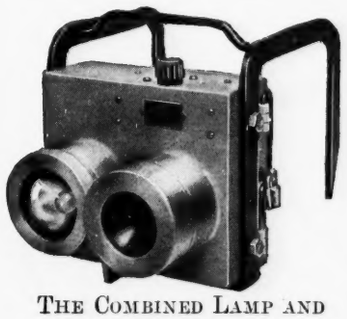
is the absence of light underground, and also how thoroughly and implicitly man depends upon his eyes to guide his ordinary movements. And what is true of a man in this respect, is also true of an animal, although, perhaps, in a modified degree.

In the past the light mostly used in mining was the oil torch, which burns with a long and smoky flame, and although probably many attempts have been made to utilize such a lamp to aid man's best friend underground, the mine mule, such attempts have almost universally met with failure. All animals fear fire.

Since the advent of the small and portable storage battery, and the development of the efficient low-voltage incandescent lamp, the necessity for the old smoky long-flame oil torch has been removed. Mr. Douglas, stable boss of the New River Consolidated Collieries Co., at Eccles, W. Va., has devised a mule lamp of the storage-battery type, the rights to manufacture which have been given to the Hirsch Electric Mine Lamp Co., of Philadelphia, Penn. This lamp is identical in principle with the miner's cap lamp, except that the light bulb is attached directly to the storage battery, in this respect resembling the storage-battery hand lamp. A strap suitably arranged suspends the lamp and battery from the collar and hames of the harness, and the light thus hangs at a point where it will illuminate the mine passages to the best advantage, so far as the mule is concerned.

It is claimed that mules carrying this kind of light are much surer footed than are animals not thus equipped. Many accidents to mule flesh are thus avoided and the animal goes at his work with a greater willingness. Consequently more coal may be hauled out. The drivers, furthermore, are enabled to do more work and that under safer conditions.

In addition to the mule lamp just described, the above named company is placing upon the market a combination trip light and bell, which can be distinctly seen and heard at a distance of 500 ft. This is ruggedly built for the rough handling of the mines, and is claimed to be an effective accident preventer. A combination trip light and horn has also been developed, which it is claimed is reliable under all conditions and gives a shrill warning of the approaching trip.



THE COMBINED LAMP AND HORN

Another appliance, which is largely in the form of a safety device, is a storage-battery trip lamp, or tail lamp with a bright red reflector. This serves as a danger signal without the confusion commonly experienced with the ordinary type of lamp, or the oil-burning torch.

Coal in Northern Montana

The coal of the Cleveland field, Blaine County, Mont., is described by C. F. Bowen in a report issued by the United States Geological Survey in Bulletin 541-H.

Practically all the coal of the Cleveland field occurs north of Peoples Creek, in the northern part of the state. As the surface is covered by glacial drift the coal beds are, as a rule, exposed only in the coulees where the drift has been eroded. At these places they are thin and are commonly separated by shale partings.

The coal has been opened at a few places by ranchers, and in Sec. 35, T. 30 N, R. 20 E, there is a small mine operated in the winter, which produces about 600 tons of coal a year. The coal is similar in quality to that in the Milk River field, in the vicinity of Chinook.

The question of temperature has an important bearing in all tests and calculations on electrical conductors, since the resistance varies directly with the temperature. The resistance of copper wire increases about 0.23 per cent., and that of iron wire about 0.28 per cent. for each additional degree Fahrenheit.

The New Knowledge of Coal and Its Practical Application

By Horace C. Porter*

SYNOPSIS—The author says that the loss due to the needlessly inefficient use of coal, after it is mined, costs this nation at least $240,000,000 a year. He suggests that partial carbonization of coal with saving of byproducts should be one of the industries of the country. We should not only make coke but also partially devolatilized coal. Some coals exposed to heat promptly give off large quantities of volatile matter, yet in the long run their carbonization may not provide as much volatile matter as coals which break down less speedily.

At least 80 per cent. of the total power operating modern industries is derived from the combustion of fuel. Coal and the coke and gas made from it constitute 85 per cent. of the industrial fuel of America.

The proportionate cost of power to other charges for production varies widely in different industries, but taking them as a whole, the census reports show that fuel constitutes about 8 per cent. of the operating costs, exclusive of the cost of materials, in manufacturing industries. From this the importance of efficiency in the use of fuel becomes at once apparent, and it is made clear also by the fact that over 150,000,000 tons of coal are used for industrial power.

If the utilization of the energy of this coal were everywhere increased by 8 per cent., an increase entirely possible through the use of modern, improved, steam-engineering appliances and of the gas producer and gas engine, the cost of the industrial fuel used in the United States would be cut in two and at least $150,000,000 saved. If all the coke produced in the United States in 1913 had been made in byproduct ovens, $80,000,000 worth of byproducts might have been saved and the higher yield of coke would have resulted in a further earning of $10,000,000.

The United States Is the Largest Producer and Most Extensive User in the World

Coal is by far the biggest mineral product of the United States. The production in 1913 was about 570,000,000 tons and the bulk of this was consumed in our own land. The nation's coal bill was in the neighborhood of 1½ billions of dollars, or $60 for each wage-earner per annum. The United States is far ahead of other nations in coal production, having passed Great Britain, the nearest competitor, in 1899, and now surpassing her by nearly 100 per cent. Since we export but little coal and other nations a great deal, our home consumption surpasses that of other countries by even a much greater margin. Our industries are greater, to be sure, but we must face the fact also that an abundance of fuel resources has made us careless of efficiency in their use.

The coal reserves of this country are immense, the most recent estimates of the United States Geological Survey (for the XII International Congress of Geology, Canada, 1913) showing 1500 billions of tons easily available, not including the sub-bituminous and lignitic coals, these as yet not being widely used.

Purposes for Which Our Coal Is Used

The 570 millions of tons produced in the United States were used approximately as follows:

PURPOSES FOR WHICH COAL IS MINED

Purpose	Short Tons	Per-centage
Domestic	120,000,000	21
Other heating of buildings	85,000,000	15
Coke and gas	75,000,000	13
Locomotives and steamboats	110,000,000	19
Industrial power (including central power plants)	180,000,000	32
	570,000,000	100

Scientifically the methods of utilizing coal may be classified into (1) combustion, (2) carbonization, and (3) gasification by partial combustion. Probably 80 per cent. of the coal consumption in America comes under the first class; that is, it is directly burned in air, and we see therefore the great importance of improving practical methods and appliances to assure efficient combustion.

Burning the Coal in Two Forms

In a combustion furnace using coal, all the coal and the intermediate products evolved from it are burned for their heating value only. On the other hand, the coke oven or gas retort utilized the coal more scientifically by converting it into two improved forms—fuel coke and gas—with a combined heating value about 85 per cent. of that of the coal, and in addition thereto saving the intermediate byproducts—tar, benzol and ammonia—which have a chemical value far exceeding their value as fuel. The coke and gas as fuels can be burned without smoke and with greater efficiency than the raw coal. A portion of the coke or of the gas, to be sure, must be used to supply the heat for carbonizing, this item amounting usually to from 10 to 14 per cent. of the original heat units in the coal.

It is not an idle dream to look forward to the time when there will be many central power and heating stations in the form of large byproduct coke-oven plants, placed at the mines or near large cities. As influences leading to this end, we may mention the following: Modern advances in long-distance transmission of electric power, the increasing demand for and value of coal byproducts for chemical purposes, the successful use of coke as a domestic and industrial fuel, the development of the gas engine, and the growth of public opposition to the smoke nuisance.

Devolatilizing Coal for the Market

Low-temperature or medium-temperature carbonization of coal has lately been introduced in Europe on an industrial scale. Coal is heated from 500 deg. to 700 deg. C. (932 deg. to 1292 deg. F.), either under reduced pressure or in a current of auxiliary gas which passes directly through the coal, producing high yields of tars or oils and rich gas in small quantity. These processes depend

*Chemical engineer, U. S. Bureau of Mines.

NOTE—Abstract of lecture delivered before the Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, Penn., Nov. 9, 1914. The first of a series on recent advances in Chemical Engineering, given as an evening course largely to graduate students.

for their commercial success on the quality and marketability of the oils and solid residues produced. Because of their adaptability to the recovery of oils, such as possibly motor fuels from coals not heretofore commonly used for byproducts, they offer an interesting field for industrial experiment in the United States.

In the present commercial situation brought on by the European war, the lack of an adequate supply of creosote oil, largely a coal-tar product, is a big incentive to the increase of coal-carbonizing operations in this country. Sufficient coal tar and benzol can be produced from existing byproduct coke ovens and gas retorts to supply the present American demand for all other coal-tar products, creosote oil being excepted. But in view of the increasing use of benzol for many purposes and of the growing demand for coal-tar products of all kinds, there is an opportunity for a large expansion of the coal-carbonizing industry, in the near future.

Composition of Coal Still an Unsolved Riddle

Coal is a mixture of complex organic substances which are degradation products of cellulose, resins and gums, and vegetable fats and waxes. Free carbon has never been proven to exist in coal, and hydrocarbons are probably not present in an amount greater than 1 per cent.

The problem of the constitution of coal has been attacked chiefly by two methods: (1) Extraction with solvents, and (2) destructive distillation at low temperatures. Extraction, while it has resulted, by use of pyridine, in dissolving and removing 15 to 18 per cent. of the coal substance, has not separated any single definite identifiable compound in more than mere traces.

Destructive distillation also has led to no exact results, but it has given, on the other hand, certain well defined indications of the nature of the substances present. These are mainly that coal is made up of many complex substances, which have resulted from degradation or decay of plant cellulose, lignose, resins and waxes. These substances in coal are closely graded into one another in chemical nature and composition, except that the cellulose and lignose group is probably more or less sharply distinguished from the resinous group. Within each group are substances in many different stages of alteration by aging.

Chemically the cellulose bodies are distinguished by their higher content of oxygen, by their tendency to combine with or absorb that element, and by their thermal decomposition into carbon dioxide and monoxide, water of constitution, and paraffin hydrocarbons. The resinous constituents, on the other hand, have a higher content of hydrogen and less of oxygen and decompose by heat into hydrocarbons and hydrogen with small quantities of carbon dioxide and water. The resinous bodies are contained most abundantly in the coking and mature coals of the Appalachian region.

Little or No Real Volatile Matter in Any Coal

The term "volatile matter of coal" is more or less of a misnomer, but serves as well as any other. There is probably little or no material in coal which is volatile without decomposition. What we call "volatile matter" is a mixture of vapors and gases resulting from decomposition of the coal substances by heat. Its composition depends on the kind of coal and also much on the temperature to which the coal is heated and to which the primary products are subjected.

By "primary products" are meant those which form first as the coal slowly rises in temperature. These are in order of their formation: Water, hydrogen sulphide, carbon dioxide, various saturated and unsaturated paraffin hydrocarbons and hydrogen. Many, in fact most, of the commonly known constituents of coal gas, coal tar and gas liquor, such as benzene, naphthalene, pitch and ammonia, are the products of secondary decomposition of these primary products.

Much "Volatile Combustible Matter" Cannot Be Burned

We see, therefore, that the volatile products of coal are not all combustible. From some bituminous coals, completely dried, we obtain by decomposition as much as 10 per cent. of noncombustible volatile matter, and from some lower-grade coals even as much as 15 or 18 per cent. So there can be no question that the term "volatile combustible matter" as frequently used is decidedly a misnomer, because from one-eighth to one-half of the volatile matter of coal is noncombustible. It is important to bear this in mind when comparing fuels, since those coals, the volatile matter of which is rich and smoky, are more difficult to burn efficiently than others having a volatile matter possibly greater in amount but more largely inert.

The Cellulosic Bodies Give Off the Incombustible Gas

An organic substance, of the cellulose nature, produces water and carbon dioxide and also monoxide, on decomposition by heat. When cellulose itself decomposes at temperatures below 500 deg. C. (932 deg. F.), 43 per cent. of its weight appears in the volatilized products as water and carbon dioxide. So also coal produces these products by decomposition, and the more abundantly the less matured and metamorphosed is the coal. We must expect to find an aqueous liquor distilled from coal during its decomposition, and in fact at gas works and coke ovens such is the case, a much greater volume of aqueous ammonia liquor being obtained, especially in the hydraulic mains (the first condensing point), then corresponds to the volume of the wash water added.

These facts enable us to draw inferences, at least, as to the chemical character of some of the substances in coal. The younger coals, like the lignites and sub-bituminous fuels, must contain large proportions of bodies with —OH and —CHO groupings, like the celluloses, since they produce water and carbon dioxide so readily; in the more mature coals, like the coking and high-grade steaming coals, there are not as many of these oxygen-bearing groups, but, probably, more of certain highly complex long-chain or many-ringed bodies having side groups of readily separable hydrogen atoms or of alkyls corresponding to the paraffin and possibly the aromatic hydrocarbons. These hydrocarbon groups are set free by heat, and then easily undergo further decomposition into the simple, commonly known products like methane and hydrogen.

The Hydrogen Probably Comes from Breaking down of Bodies Liberated at Low Temperatures

The theory of Wheeler, of the British Coal-Dust Experiment Station and others that coal contains considerable quantities of certain substances which decompose only above 700 deg. C., or 1292 deg. F., and thus yield principally hydrogen and the oxides of carbon, is hardly justified

by the experimental data at hand. More reasonably is it to be supposed that the large amount of hydrogen which is produced above 700 deg. C., or 1292 deg. F., comes from the secondary breaking down of the hydrocarbons first liberated, and of the partially carbonized solid material left behind, these things not having been present, either of them, as such in the original coal. It is likely that all the organic substance in the fuel decomposes early by heat, below 500 deg. C. or 932 deg. F.

Why Coals Coke Is Not Yet Solved

The nature of the substances liberated or volatilized from coal by moderate heat throws some light on the coking properties of the coal. If by prolonged heating at 400 deg. C., or 752 deg. F., the coal shows little or no tendency to soften or sinter together, and liberates water and gas but only a small quantity of heavy, viscid tar or pitch, it does not have good coking properties.

Laboratory tests to show the coking quality of coals have never been satisfactory. Several are used which give more or less indication but are not definite. Among these may be mentioned (1) heating to a red heat a small sample inclosed in a covered, well filled platinum box, and examining the coke bar produced; (2) rubbing or grinding the coal in a mortar and noting the tendency to cake or adhere to the pestle and mortar; (3) analyzing for C, H and O and comparing ratios of O to H.

In recent laboratory experiments in Germany, cellulose has been converted into coal by subjecting it to very great pressure with moderate heating. Certain studies are now in progress to determine methods of increasing yields of some of the byproducts of coal carbonization, for example, the commercially desirable benzol and light oils, through carbonization at low temperatures and subsequent treatment, under carefully controlled conditions, of the tars thus produced.

Some Coals Volatilize Promptly when Heated but Their Volatile Output Later Falls Off

In the utilization of coal, particularly in burning on furnace grates, the rate at which the volatile matter is set free is frequently of greater importance than the total quantity produced. Coals vary greatly in this respect. The following results obtained in the laboratory on three different coals similarly treated (0.4 gram powdered, air-dry coal heated at 1000 deg. C., or 1832 deg. F), bring out this variation:

PERCENTAGES OF VOLATILE MATTER EXPELLED IN DIFFERENT PERIODS OF TIME

	5 Sec.		80 Sec.	
	Total	Combustible	Total	Combustible
New River, W. Va.	5.8	4.8	20.0	17.5
Pittsburgh, Penn.	9.0	7.5	34.0	28.1
Sheridan, Wyo.	36.0	12.4	49.0	21.6

It may be seen from these data that while the Pittsburgh coal finally produces more combustible volatile matter than that from Wyoming, the latter liberates considerably more in the first few seconds of heating.

The rate at which a given coal liberates volatile matter depends, first, on its chemical character, that is, its ease of decomposition, and, second, on the rate at which heat is supplied to it. The ratio between the quantity of coal heated and the quantity of heat supplied in unit time determines the rate at which any given coal becomes heated. It is, therefore, not a question of temperature as much as of quantity of heat and quantity of coal. When each particle of coal has attained a temperature of 900 deg. C., or 1652 deg. F., its decomposition into coke and volatile matter is practically complete.

The Variants in the Volatilization of Coal

Three points stand out as of importance in connection with the volatile matter, the constituent of coal which is so vital in all processes of coal utilization:

1. The composition as well as the quantity of volatile matter varies greatly between coals.
2. The first products volatilized in the early stages of a coal's rise in temperature are essentially different from the total product as usually obtained. These first primary products are largely tarry liquids, with some water vapor and heavy complex gases. Heating conditions determine the degree of secondary thermal decomposition of these products and the composition of the final gas and tar.
3. The rate of evolution of the volatile matter from coal is of practical importance and varies considerably with the kind of fuel. For a given coal it is dependent upon the relation between the quantity of coal heated and the quantity of heat supplied, not the temperature.

Oxidation and Ignition

Next to thermal decomposition or the evolution of volatile matter, perhaps the most fundamental process involved in the practical utilization of coal is that of oxidation or burning of the substance as a whole.

Slow oxidation at ordinary temperatures gives rise to spontaneous combustion and deterioration in storage; rapid oxidation has much to do with the initiation and propagation of coal-dust explosions in mines, and with the relative ease of ignition of fuels in general. The process of igniting a combustible substance is not as simple as it may seem on first thought, and just why some fuels ignite more easily than others requires careful analysis.

The Chip of Wood Burns before Its Gases Are Inflamed

At temperatures above that of the first appreciable decomposition of the substance (say 250 to 300 deg. C., or 482 to 572 deg. F. in case of coal), the process of combustion is complicated by the distillation of combustible gases and vapors and the alteration of the solid material. The gases and vapors of decomposition are not, however, all combustible and in fact those produced from the most readily ignited materials such as wood are largely noncombustible.

A splinter of wood held in a flame quickly ignites, it is true, because the gases of decomposition are quickly heated to their ignition temperatures. But we can also ignite the wood easily in a glass tube at 250 deg. C., or 482 deg. F., by passing a current of oxygen over it. Here the ignition cannot be a matter of distilled gases since the temperature used is much below their points of ignition.

Relative ease of ignition is unquestionably dependent to some extent on ease of oxidation; that is, the rapidity of the reaction of the substance with oxygen. Recent laboratory studies have shown that the wide variation among different coals and other combustible substances in their rate of oxidation follows the known variation

in ease of ignition, in susceptibility to spontaneous combustion, and in rate of deterioration in storage.

Oxygen Does Not Burn the Carbon or Hydrogen at Low Temperatures but Is Occluded

The action of oxygen on coal at ordinary temperatures has been shown by recent investigation to consist not in a burning of the carbon to carbon dioxide nor probably of a burning of the hydrogen to water, but largely of an addition of oxygen to the coal substance. This action develops heat. English investigators have shown that the calorific effect of this oxidizing action at 40 deg. C., or 104 deg. F., amounts to between 2 and 3 calories per cubic centimeter of oxygen consumed, only a little less than that produced per cubic centimeter of oxygen when coal is completely burned in which case 3 to 3.5 calories are developed.

The rate of oxidation increases rapidly with rise of temperature. A coal which at 30 deg. C., or 86 deg. F., consumes say 10 c.c. of oxygen per 100 grams in an hour, will multiply this rate so rapidly from the effect of its own production of heat, that the temperature would rise to 180 deg. C., or 356 deg. F., in a little over two days if no heat were lost. This would result speedily in ignition if an adequate oxygen supply were at hand.

Dangers in Storing Run of Mine

Spontaneous combustion in stored coal results from this slow oxidation by the air at ordinary temperatures. It is not, in any important degree, a matter of bacterial action, or fermentation. When conditions as to the size of coal and manner of piling are such that the rate of heat production by oxidation is greater than the rate of heat loss by convection currents and radiation, the temperature rises.

One of the most important practical considerations is whether an adequate air supply can penetrate to an inner section of the pile where the heat loss is slow. Fine slack coal does not heat seriously in the interior of a pile, if no lump is present. If, however, the material within consists largely of fine coal and the outer and lower sections of lump with little slack, one of the worst possible conditions is found, and spontaneous fires commonly result from such concurrent conditions.

Deterioration of coal in storage is due to slow oxidation, not to loss of volatile matter. The reduction in heating value is not as great as has commonly been supposed. With high-grade bituminous and semibituminous coals, careful determination has recently shown that this loss amounts to less than 1 per cent. in one year's exposure to the weather, and less than 3 per cent. in 5 years. With our Middle-Western and Western coals or lignites the loss is greater but probably does not exceed 4 or 5 per cent. in one year in any case. Deterioration in size or physical character may be somewhat more serious, and spontaneous heating even though moderate in degree causes an important loss. Deterioration of any kind may be quite largely prevented by storage under water.

The Manchurian Railway Company operates five coal mines which give employment to 7000 Chinese laborers who work for 25c. per day. The output is about 3000 tons for each mine per 24 hours. Though the coal is bituminous, a combination of anthracite and metal methods of mining is used, for the seam is too thick, 125 ft., to make bituminous methods practical.

Coke-Oven Accidents during 1913

By Albert H. Fay

The hazard of the coke industry compares favorably with the quarry industry and the surface workings of metal mines, as shown by figures collected by the Bureau of Mines for the year 1913. The investigation conducted by the bureau includes the reports of 294 establishments, 67 of which were reported as idle, leaving 227 plants as operating, and for which accident reports were received.

These plants employed 24,345 men and of this number 46 were killed, 342 seriously injured, and 2172 slightly injured. The number killed and injured per thousand employed at coke ovens in 1913 was 1.89.

The number of coke establishments is practically 575, with slightly over 100,000 ovens. The Bureau's report embraces practically one-half of the operators, and 80 per cent. of the ovens, the number reported to the bureau as active being 67,526, and in addition 12,450 ovens were reported idle. While the accident figures thus collected are not complete for the entire industry, yet they are thoroughly representative. No distinction has been made concerning the type of ovens in use.

Serious and Slight Injuries

The distinction adopted between a serious and slight injury is in accordance with that used by the bureau in the collection of mine- and quarry-accident statistics. Hence, a serious accident is considered in this report as one that would disable a man and keep him from duty 20 days or more. This class includes such injuries as broken arms and legs, loss of eye, and severe cuts and bruises.

A slight injury is considered as one that involves a loss of more than one day and less than 20 days. Under this class may be placed such injuries as cuts, sprains, mashed fingers, bruises, dirt in eye, slight burns, effect of powder smoke, etc. Of course, any slight injury may become infected and thus result in a serious accident, as defined above.

Causes of Accidents

It is stated that 13 fatalities resulted from accidents caused by cars, larries and motors, and 7 fatalities were caused by railway cars and locomotives, making a total of 20 deaths due to haulage or transportation systems, representing 43 per cent. of all the fatalities. Six fatalities were due to coke-drawing machines, representing 13 per cent. of the total, and 11 per cent. to electricity.

Of the serious injuries 26 per cent. were due to haulage systems; 23 per cent. to falls of persons. Of the slight injuries, 8 per cent. were due to haulage systems; 12 per cent. to falls of persons; 14 per cent. to hand tools and 16 per cent. to burns.

Since 43 per cent. of the fatalities at coke ovens are due to haulage systems, greater care and precaution should be taken to safeguard the employees who operate or work adjacent to transportation equipment. Inasmuch as electric haulage is used extensively, a large percentage of the electrical accidents may also be classified with those resulting from haulage systems, or a total of approximately 50 per cent. of all fatalities. It is in this department of the coking industry that there appears to be an excellent field for accident reduction.

Triangulating from Two Plumb Wires

Albert G. Wolf, mining engineer of Buckhorn, Nev., shows in the *Engineering and Mining Journal* the degree of accuracy attainable in triangulation from two plumb wires. Two methods are used in shaft plumbing. In one the transit is set up directly in line with both wires; in the other it is set to one side of them, the distance from the transit to each wire and the horizontal angle are measured and the triangle is calculated. In the first method the number of measurements is less than in the second and calculations are eliminated, but as a rule it takes longer to make the set-up. It is not the purpose of this discussion, however, to argue the respective merits of the two methods, but to point out the conditions under which the triangulation method can be used, when necessary or desired, with the least liability to error.

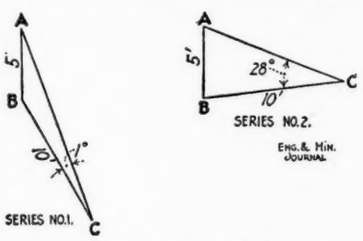
It is evident that a triangle with a small angle at the instrument, this angle small by reason of the instrument's being nearly in line with the two wires, not, however, at a great distance from them, will give the best results; for if the instrument is in line with the two wires an error in chaining will make no difference in the bearing and no horizontal angle is involved. To show exactly the relative importance of the errors to be avoided, two series of triangles of three each have been assumed and errors in azimuth calculated for assumed errors in measurement of the various parts of the triangles.

In the first series the following assumptions have been made: Distance between wires, 5 ft.; short leg of triangle, successively, 10 ft., 25 ft. and 50 ft.; angle at instrument, 1°. In the second series: Distance between wires, 5 ft.; short leg of triangle, 10 ft., 25 ft. and 50 ft.; angles at instrument, 28°, 11° and 5°, respectively. The calculations for 11° and 5° are not given in the table but those for 1° and 28° are elaborated in full.

The vertex angles of isosceles triangles with 5-ft. bases and sides 10, 25 and 50 ft. would be 28° 57′ 18″, 11° 28′ 42″ and 5° 43′ 54″, respectively, so it can be seen that the angles assumed in the second series approach nearly the maximum for triangles with the base and short side assumed. Errors of measurement assumed in each side are 0.02 ft. and in the angle at the instrument, 30″. The result in error in azimuth is calculated for each assumed error in measurement separately and the results are tabulated.

Set Up Near the Plumb Wire and as Nearly in Line as Possible

An inspection of the table shows that a small error in measuring either leg of a triangle in the first series makes an immaterial difference in azimuth, while in the second series an equal error in measuring makes an appreciable difference from the true azimuth. An error in measuring the angle at the instrument or the distance between wires, in either series, makes a large error in azimuth, but the error in a triangle of the first series is smaller than the error in a corresponding triangle of the second series. Now, referring to the first series of triangles only, it can be seen that the distance from the instrument to the wires makes no appreciable difference in the error in azimuth when an error in measuring to the wires is made, but an error in azimuth caused by an error in measuring either the distance between the wires or the angle at the transit increases rapidly as the distance from the instrument to the wires increases. In any set-up, therefore, the most serious errors to be avoided are those involved in measuring the distance between the plumb wires and the horizontal angle at the instrument. A check on the accuracy of the former is obtained by measuring between wires at the collar of the shaft, or point of suspension, and at the level of the set-up. The error in measuring the angle is reduced to a minimum by repeating the measurement and taking the average. An error in taping either of the legs of any triangle as large as the error assumed is not liable to be made if the work is checked and care is taken to hold the tape level.



Diagrams of Two Methods of Setting Up

In conclusion, the set-up least liable to result in an error in azimuth in triangulating from two plumb wires is one near the wires and in such a position that the horizontal angle measured at the transit is small.

ERRORS IN AZIMUTH, RESULTING FROM ERRORS IN MEASUREMENTS IN TRIANGULATION PLUMBING

Series No. 1. Triangle with Small Angle C

Error assumed / In	Lengths of Sides: Short Leg	Long Leg (Calculated)	Base Line	0.02 ft. Short leg: From Short Leg Inaccuracy	0.02 ft. Long leg: From Long Leg Inaccuracy	0.02 ft. Base line: From Base Line Inaccuracy	30″ Angle measured (C): From Inaccuracy in Angle	Calculated Angles Assuming Correct Measurements
				Error in Bearing				
								C = 1° 0′ 0″
	10 ft.	14.9954 ft.	5 ft.	in A = 14.4″	in B = 14.4″	in A = 28.7″ in B = 43.1″	in A = 1′ 00″ in B = 1′ 30.1″	A = 2° 0′ 1.1″ B = 176° 59′ 58.9″
								C = 1° 0′ 0″
	25 ft.	29.9771 ft.	5 ft.	in A = 14.5″	in B = 14.5″	in A = 1′ 12″ in B = 1′ 26.5″	in A = 2′ 30.6″ in B = 3′ 0.8″	A = 5° 0′ 22″ B = 173° 59′ 38″
								C = 1° 0′ 0″
	50 ft.	54.9157 ft.	5 ft.	in A = 14.6″	in B = 14.7″	in A = 2′ 25.7″ in B = 2′ 40.5″	in A = 5′ 4.6″ in B = 5′ 35.7″	A = 10° 3′ 3.5″ B = 168° 56′ 56.5″

Series No. 2. Triangle with Large Angle C

Error assumed / In	Length of Sides: Short Leg	Long Leg (Calculated)	Base Line	0.02 ft. Short leg: From Short Leg Inaccuracy	0.02 ft. Long leg: From Long Leg Inaccuracy	0.02 ft. Base line: From Base Line Inaccuracy	30″ Angle measured (C): From Inaccuracy in Angle	Calculated Angles Assuming Correct Measurements
				Error in Bearing				
								C = 28° 0′ 0″
	10 ft.	10.5498 ft.	5 ft.	in A = 18′ 54.2″	in B = 49′ 37.5″	in A = 36′ 50.3″ in B = 1° 30′ 25.9″	in A = 2′ 34.1″ in B = 6′ 51.1″	A = 69° 52′ 29.4″ B = 82° 7′ 30.6″
								C = 11° 0′ 0″
	25 ft.	26.039 ft.	5 ft.	in A = 8′ 47.6″	in B = 24′ 9.2″	in A = 42′ 45.6″ in B = 1° 46′ 43.3″	in A = 8′ 13.3″ in B = 23′ 31.1″	A = 72° 33′ 45.3″ B = 96° 26′ 14.7″
								C = 5° 0′ 0″
	50 ft.	52.2612 ft.	5 ft.	in A = 2′ 26.8″	in B = 22′ 54.6″	in A = 24′ 11.8″ in B = 29′ 57.7″	in A = 10′ 11.1″ in B = 12′ 40.4″	A = 60° 38′ 24.5″ B = 114° 21′ 35.5″

Coming Annual Meeting of A. I. M. E.

The annual meeting of the American Institute of Mining Engineers will be held in New York, Feb. 15 to 17, inclusive. The annual dinner has been arranged for the evening of Feb. 16. The price of the dinner will be $5 per plate. The attendance of ladies is especially urged. During the convention there will be several meetings of the alumni of various colleges.

On the program are a number of papers that will interest coal-mining people. On Monday morning, Feb. 15, Frank H. Kneeland, associate editor of COAL AGE, will present a paper, entitled "Safeguarding the Use of Mining Machinery." Following this, Howard N. Eavenson, mechanical engineer of the U. S. Coal & Coke Co., at Gary, W. Va., will read a paper on "Safety Methods and Organization of the U. S. Coal & Coke Co." On Tuesday, commencing at 2 p.m., there will be a Technical Session on Fuels. The following papers will be presented: "The Limits of Mining under Heavy Wash," by Douglas Bunting, chief engineer of the Lehigh & Wilkes-Barre Coal Co., Wilkes-Barre, Penn.; "Recent Developments in Coal Briquetting," by Chas. T. Malcolmson, briquetting expert, Old Colony Bldg., Chicago, Ill.

The meeting of the committee on coal and coke will be held at 4 p.m., Tuesday afternoon.

At 2 o'clock on Wednesday afternoon, there will be a Technical Session on Electricity in Mines. One of the papers will deal with underground haulage by storage-battery locomotives.

Lackawanna Banquet

A banquet was given Jan. 6 by H. G. Davis, district superintendent of District No. 4 of the Delaware, Lackawanna & Western R.R. Co. Coal-Mining Department, the guests being principally the inside and outside foremen of the collieries under his charge, which are Woodward, Pettebone, Avondale, Auchincloss, Bliss, Truesdale, Loomis and Shafts 3 and 4 of the Pettebone colliery around Wilkes-Barre, Penn.

This social gathering which took place at the Hotel Redington, is an annual event, but this year the foremen had decided to make it notable by the presentation of a large leather-covered morris chair to W. B. Owen of Dorrancetown, who, after 56 years of hard toil, has resigned his position with the company. He started work with the corporation as a breaker boy and since that time has been steadily promoted.

C. E. Tobey, general superintendent of the company, acted as toastmaster and among the invited guests were B. Samson, superintendent of construction, D. R. Reese, attorney of the coal-mining department; W. B. Thornton, superintendent of coal preparation; P. H. Devers and R. P. Thomas, assistant deputy superintendents; Dr. D. H. Lake, company physician, and S. J. Jennings and D. T. Davis, mine inspectors.

The speakers at the banquet were D. R. Reese, who spoke on mine accidents, declaring they were not unavoidable; P. H. Devers, whose address was on vocational schools and the Nanticoke Mining Institute; D. T. Davis and S. J. Jennings, who emphasized the need for further safety, the latter denouncing the fatalistic notion that "accidents will happen" no matter what is done to avoid them; Dr. D. H. Lake, who spoke on the value of first aid.

The Anthracite Rate Case to Philadelphia

Five railroad companies have taken an appeal to the Court of Common Pleas of Dauphin County from the decision of the Public Service Commission of Pennsylvania in connection with the reduction ordered in the anthracite rates to Philadelphia on the following grounds:

(1) The decision in question orders not only a reduction in the rates on anthracite coal used for domestic purposes, but also a reduction in the rates on sizes of coal not so used, which rates were not embraced in the complaints filed with the Commission and the traffic moved under which is approximately 50% of the total anthracite coal tonnage to Philadelphia.

(2) The applications to the freight rates on all other commodities of the principle applied by the Commission in determining the Philadelphia rate on anthracite coal would produce commercial chaos and reduce the net revenues of the carriers by an amount far greater than the gain under the decision of the Interstate Commerce Commission in the Five Per Cent. Rate Case and the recent adjustment in the passenger rates.

(3) The reductions in the rates ordered will force the reduction of a large number of other anthracite rates, both state and interstate, to points other than Philadelphia.

(4) The effect of the reduction will be to diminish the net revenues of the Pennsylvania Railroad Co. by approximately $1,500,000 a year, the net revenue of the Philadelphia & Reading Railway Co. by approximately $2,000,000, and of the other companies by several hundred thousand dollars per annum.

The importance to the state of Pennsylvania and to the city of Philadelphia of adequately conserving the revenues of the carriers demands that immediate action shall be taken to protect their revenues from such widespread destruction as is involved under this order of the Public Service Commission.

The railroads which will enter appeal are: The Philadelphia & Reading Ry. Co., Pennsylvania R.R. Co., Lehigh Valley R.R. Co., Central R.R. of New Jersey and the Delaware, Lackawanna & Western. The companies will file separate appeals and also a joint appeal.—"Philadelphia News Bureau."

Safety-First Developments in the Northwest

The Anaconda Copper Mining Co. of Montana has fallen into line with a number of the larger progressive Eastern coal companies in the matter of an official monthly publication, issued under the auspices of the company officials. The initial number appeared Jan. 1 and carries the appropriate title *The Anode*. It contains an interesting sketch of the safety-first developments at the company's coal operations by General Manager F. W. C. Whyte, of the coal department, which is interesting in that it typifies the current status of this movement in that section. We present the sketch in full herewith:

Up till the present time "Safety First" at the coal mines of the company has been confined to the customary rules governing such work, and to extra precautions we have learned from past experiences in the line of unlooked for accidents.

Ten years or more ago, in the mines at Diamondville, we had a fire that cost several lives, and a few years later a fatal explosion in the same mine. From these two experiences we learned several valuable lessons and have since been taking precautions at all the coal mines that are not usually practiced. For several years past our mines have been comparatively free from accidents, averaging somewhat below the neighboring operations, and it is my opinion that after the safety first committee has the time to attend to our needs and prescribe for our conditions we will effect a still further reduction in our accident rate.

So far we have only made the preliminary start in the way of cleaning up around and in the mines with a view to eliminating accidents due to interference in a man's working zone, and are now ready to organize with committees, etc., to carry the good work along. When this has been done there is no doubt in my mind that the Anaconda Co.'s mines at Diamondville, Washoe and Sand Coulee will compare more than favorably with any of the coal mines in the West.

When wire is purchased for the purpose of stringing on poles for electric transmission, the general impression is that it is easier to handle if placed on reels than if in coils, but if this question were given a little thought, persons having such an idea would soon be convinced otherwise. They should take into consideration the transportation of wire in coils as against that on reels, the increased amount of coiled wire that can be stored in a given space as compared with the same amount placed on reels, the increased cost of freight due to reels, and the necessity of keeping the reels in good condition after being emptied and the amount of handling incurred because of the empty reels, the return transportation charges and the necessary clerical work and supervision required. With coils, all labor and responsibility cease after the wire is strung.

The Labor Situation

SYNOPSIS—Ettor is arrested for treason in eastern Ohio when he endeavors to start I. W. W. violence. Strike-breakers are said to be ready for transportation to the mines on strike. Testimony of J. D. Rockefeller, Jr., in New York City.

The principal event in the strike situation of eastern Ohio, during the past week, was the appearance and arrest of Joseph J. Ettor, the noted Industrial Worker of the World. Ettor was billed to speak at Bellaire, the handbills announcing a meeting of the "revolutionists." When Ettor stepped off the train the sheriff and a few deputies armed with a warrant for his arrest on the charge of treason appeared and took him in charge. He was hurried to the county jail at St. Clairsville. Later a demonstration on the part of some of his sympathizers was made, but the authorities held them in check.

Apparently the charge of treason was based on the wording of the notices announcing Ettor's proposed address. The meeting was declared on these placards to be "under the auspices of a group of revolutionists." Ettor's subject was to be "Against War: for the Class War: Against all Capitalists of the World."

Ettor was arraigned on the charge the following day, and, upon his signing a bond in the sum of $5000, agreeing to leave the county on the first train and also to refrain from sending Industrial Workers of the World organizers and agitators into that section, he was released.

Efforts Being Made to Reopen Mines without Union Control

Reports from the eastern Ohio district show that about 150 men are now employed by the Roby-Somers Coal Co. and other mine owners are arranging to start work. Quite a few of the operators are waiting for the result of the investigation by the federal Department of Labor which is still in progress.

The Roby-Somers Coal Co. is having difficulty in its evictions. Some of the summons were illegally drawn and new papers will have to be prepared. In all eviction suits the miners have first appeared at a hearing before a justice and demanded a jury trial. They have then appealed from the decision of the jury to the court of common pleas. No cases thus far advanced have as yet been decided but it is supposed that appeals will be taken from the court's decision in order that the tenants may not be dispossessed from their houses till the spring when the temperature will be better suited for dwelling in tents.

A meeting of the federal investigators with eastern Ohio operators and John P. White, president of the United Mine Workers of America, was held in Cleveland on Jan. 23.

Bringing in Strike-Breakers

A report came from the strike zone to the effect that arrangements had been completed for the importation of 6000 miners to take the places of the strikers. This colonizing is being done by the operators' association and not by the individual operators. The plan is believed to be preferable because under it individual operators will not assume any responsibility.

The men operating the fans and running the pumps at Mines Nos. 1 and 2, of the Rail & River Coal Co., have been called out. Nonunion men may be put to work and disorder may result. Now that there is talk of a resumption without any agreement being made with the miners, the union is not disposed to let union men keep the mines in condition for working.

Comparison of Eastern Ohio with Fairmont District

W. L. Moke, general manager of the Roby Coal Co., has interests in the Fairmont district of West Virginia. He is quoted as saying:

In this particular nonunion district (Fairmont) the miners receive 38c. for loading a three-ton pit wagon and 40c. for loading a three-ton pit car in narrow work; hence 2c. per car for run-of-mine coal is the compensation they receive for driving narrow work, etc. They receive $1.60 to $1.75 for inside and outside day labor, 10 hr. per day, compared with $2.19 for outside day labor and $2.84 for inside day labor, 8 hr. per day, in eastern Ohio. Further than this the freight rate from eastern Ohio to the Lakes is 85c., while from Fairmont the rate is $1 with a difference of from 50 to 60 miles of haul. The miners of eastern Ohio are demanding 47c. a ton for machine coal though the operators have to meet this nonunion competition."

The miners recognize the importance of these railroad conditions as bearing on their attempts to secure the rate they demand. At the annual state convention of the United Mine Workers of America, held Jan. 12, the following resolution was adopted:

Freight-Rate Resolution

Whereas, the mining and marketing of coal are dependent upon transportation from mines to markets, and it is claimed that coal mined in West Virginia and Kentucky is hauled greater distances by the railroads than Ohio coal, at the same price, and that Ohio railroads are hauling West Virginia and Kentucky coal in Ohio at lower freight rates than they are charging for hauling Ohio coal; and

Whereas, the Ohio coal-mining industry and the miners and their families and all other dependent upon that industry are suffering, and it is charged that high freight rates and discriminations against coal mined in Ohio are largely responsible;

Therefore, Be It Resolved, that we respectfully petition the General Assembly of Ohio to investigate the subject at this session and give to the miners, producers and consumers of Ohio coal the benefit of the same relative freight rates over the railroads in this state that the same railroads are now giving to the miners, producers and consumers of West Virginia and Kentucky coal; and

Resolved, further, that in behalf of the miners, producers and consumers of Ohio coal and others dependent upon the industry, the Industrial Commission, the Public Utilities Commission and the attorney-general be and they are hereby respectfully petitioned to investigate and report to the General Assembly at its present session whether shipments of coal from Ohio mines are discouraged and in many cases reduced or prevented by discriminations practiced by Ohio railroads against shippers of coal mined in Ohio;

Arkansas Trouble Ending

Unexpectedly on Wednesday morning, Jan. 20, seven persons out of 20 arrested on charges found by a special grand jury last November in the investigation of the outbreaks of violence in the Prairie Creek mining district, pleaded guilty. W. C. Fitts, of Birmingham, Ala., the prosecutor for the government, entered a nolle prosequi for the other 13 defendants.

Peter R. Stewart, of McAlester, Okla., former president of the United Mine Workers of America in Arkansas, Oklahoma and Texas, was fined $1000. Fred W. Holt, of the same place, former secretary of the same district, was fined $1000 and was sentenced to six months in jail. James B. McNamara, a former councilman of Hartford, Okla., received the maximum sentence of $1000 fine and two years at hard labor at the federal penitentiary, Leavenworth, Kan. James Slankard, formerly constable of Hartford, is to pay $1000 fine and serve six months in prison, and Clint Burris, Sandy Robinson and John Manick pay $500 each and spend six months in jail.

It was announced by the prosecutor that John Champion, Dave Branch, Oscar Layton and William Reed, who were indicted on the charge of taking prisoners from Deputy U. S. Marshal Tom Black, at Hartford, shortly before the cavalry was ordered to Prairie Creek, would surrender themselves for trial.

James Slankard and Bee Trout, who were indicted for the murder of John Baskins and Clarence Syllesberry, were acquitted on Jan. 15, as testimony was brought to show that the alleged bones of the victims of the striking miners were from the carcass of some lower animal.

Whether any further action will be taken is uncertain. There will be no further attempt to redress the federal wrongs, except as regards the four men who took prisoners from the U. S. marshal, but the state may well take action to punish those who were guilty of arson and perhaps murder.

It is said that the United Mine Workers of America has deposited $50,000 to the order of the Bache-Denman Coal Co. as first payment for the mines of that corporation. The price at which the property is to be sold to the U. M. of A. is $200,000.

On Jan. 25 the executive board of the seventeenth district of the U. M. W. of A. met at Charleston, W. Va., to launch a movement to organize the miners in the Guyan Valley district.

Poor John D. Rockefeller, Jr.

On Jan. 25, 26 and 27, J. D. Rockefeller, Jr., testified before the Federal Relations Commission, and, according to the New York "American," he was severely heckled about conditions at Delagua by Chairman Walsh. He took the criticism with great serenity and did not appear to know any more than his pertinacious questioner that the Colorado Fuel & Iron Co., in which his father is interested, has no mines at Delagua, which is a Victor-American Fuel Co. camp. In fact Walsh is as much an absentee investigator as Rockefeller is an absentee owner. The whole business resolves itself into a complete farce. The people of Colorado are being victimized by agitators from outside, muck-raked by investigators who refuse to make definite inquiries, called upon to assent to conditions imposed by President Wilson, who has never been on the

ground, and generally are suffering from long-distance treatment with all it entails.

Because Mr. Rockefeller did not deny several charges, it is declared he practically admitted them. If not denying is admitting, the Victor-American Fuel Co. may look well to its title in Delagua since John D. Rockefeller, Jr., did not deny that his father owned the plant. In fact, all the Colorado people may as well surrender claims to their property; the public refuses to believe that there is any other company than the Colorado Fuel & Iron Co. doing business in the state and that there is any other stock besides that which the Rockefeller interest owns, though John D. Rockefeller, Jr., has repeatedly called attention to the falsity of this opinion.

Mr. Rockefeller testified that $92,000,000 had been paid in wages since the stock had been purchased by his father, that the whole revenue derived by the Rockefeller stock was only $371,000. As that stock amounted to $6,000,000, the earnings were about two-thirds of one per cent. per annum. The estate also holds bonds but the investment both on stock and bonds has not amounted to 3½ per cent. per annum.

J. D. Rockefeller, Jr., Outlines His Attitude

Mr. Rockefeller made some remarks of much interest, among others the following:

As to the strike itself, its many distressing features have given me the deepest concern. I frankly confess that I felt there was something fundamentally wrong in a condition of affairs which rendered possible the loss of human lives, engendered hatred and bitterness and brought suffering and privation upon hundreds of human beings.

Without seeking to apportion blame, I determined that in so far as lay within my power I would seek means of avoiding the possibility of similar conflicts arising elsewhere or in the same industry in the future. It was in this way that I came to recommend to my colleagues in the Rockefeller Foundation the instituting of a series of studies into the fundamental problems arising out of industrial relations, which resulted in securing the services of Mackenzie King, former minister of labor of Canada, to direct the studies.

The correspondence will show that, in addition to having taken steps as early as the beginning of June last to secure Mr. King's services, I also sought and obtained advice with respect to machinery for the prevention and adjustment of industrial differences, to which I invited the consideration of the officers of the Colorado Fuel & Iron Co.

In early August I wrote the president of the company, forwarding, with my indorsement, a letter from Mr. King, written in answer to my request, outlining a plan previously discussed, to establish:

"A board on which both employers and employed are represented, and before which, at stated intervals, questions affecting conditions of employment can be discussed and grievances examined."

In reply to this communication, the president of the company indicated that measures of the kind I had suggested were in contemplation, but that their adoption while the strike was on would only serve to embarrass their successful introduction. He further indicated that, when the strike was terminated, steps would be taken immediately to secure to the employees of the company a more direct representation of their views as regards grievances and conditions affecting their employment.

The Miners to Be Represented

The strike was called off Dec. 10, 1914. On Dec. 16, David Griffiths, formerly state coal mine inspector of Colorado, was appointed an intermediary between the company and its employees, respecting matters of mutual interest.

On Jan. 5 a notice was posted at all the company's mines inviting the employees at each of the mines to assemble in mass meeting to select by ballot one representative to every 250 employees in each camp, to represent the men at a joint meeting of themselves and the executive officers of the company in Denver, "for the purpose of discussing matters of mutual concern and of considering means of more effective coöperation in maintaining fair and friendly relations."

In the published notice of these meetings it was stipulated that in order that the men might feel the greatest freedom in making their selection, they should choose their own chairman and neither superintendents nor pit bosses should attend.

Joint Conference Is a Success

I have received from the president of the company, a telegram informing me that this joint conference was held at Denver on the 19th instant, that the meeting had proved most satisfactory to all concerned and that its spirit had convinced the management that it would lead to more active coöperation between the company and its employees in the future.

I believe that the ultimate object of all activities in a republic should be the development of the manhood of its citizens; that such manhood can be developed to the fullest degree only under conditions of freedom for the individual, and that industrial enterprises can and should be conducted in accordance with these principles.

Capital Can Wait for Earnings

I believe that a prime consideration in the carrying on of industry should be the well-being of the men and women engaged in it, and that the soundest industrial policy is that which has constantly in mind the welfare of the employees as well as the making of profits, which, when the necessity arises, subordinates profits to welfare.

In order to live, the wage earner must sell his labor from day to day. Unless he can do this the earnings from that day's labor are gone forever. Capital can defer its return temporarily in the expectation of future profits, but labor cannot.

Interests of Employees in Mine

If, therefore, fair wages and reasonable living conditions cannot otherwise be provided, dividends must be deferred or the industry abandoned.

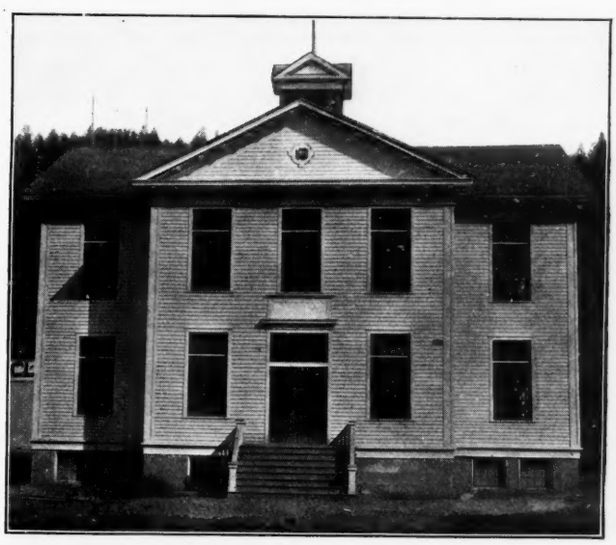
I believe that a corporation should be deemed to consist of its stockholders, directors, officers and employees; that the real interests of all are one and that neither labor nor capital can permanently prosper unless the just rights of both are conserved.

If, with the responsibilities I have and the opportunities given me, I am able to contribute toward promoting the well-being of my fellow men through the lessening of injustice and the alleviation of human sufferings, I shall feel that it has been possible to realize the highest purpose of my life.

A Company Hotel

Hotels built and owned by coal companies are quite numerous. In fact, every new mining village has its boarding house or hotel, and, like the miners' dwellings, these are built by the company. The Carbon Coal & Clay Co., of Bayne, Wash., however, runs as well as owns its own hotel, serving excellent meals at 30c. apiece. The cost per meal in November of last year was $0.196, the help adding $0.101, making a total cost $0.297. So the company made a profit of $0.003 per meal. The intention is to run the hotel without either loss or profit. The rooms are neat, clean and comfortable. The mines are run on the "open-shop" basis.

A Hotel Where Meals and Rooms Are Provided by Company at Cost, Bayne, Wash.



Schoolhouse at the Village of Bayne, Wash.

The store manager runs both hotel and store. For the hotel he lays aside a monthly rent of $200, which pays a good interest on the investment. Several hundred dollars have been spent in general village improvement and, as will be seen, the town has a creditable school for so small a community. This also was built by the company.

An Analysis of the Anthracite Shipments in 1914

SYNOPSIS—The accompanying comments and tables of shipments, stocks, allotments, etc., were compiled by the "Philadelphia News Bureau" and form a valuable reference on anthracite statistics.

The shipments of anthracite coal in 1914 as reported by A. H. Armstrong, chief of the Bureau of Anthracite Statistics, were 68,342,601 tons, a decrease of 727,027 tons as compared with 1913, in which year shipments were 63,610,578 tons. The tonnage in 1914 was satisfactory in volume and the price of coal was fairly well maintained, though it was apparent during the greater part of the year that the output was larger than the market requirements.

Probably the most important feature of the year was the aggressive movement of some of the carrying companies for tonnage. The figures show that the Reading, which has been the leading company in the ownership of coal lands and in the distribution of coal, again falls behind the Lehigh Valley. The Reading makes comparatively light shipments while the Lehigh Valley makes record shipments. For the year the Reading shows a decline of 916,000 tons as compared with 1913 and Lehigh Valley an increase of 125,000 tons. The C. R.R. of N. J. also fell behind, indicating that the conservative policy of the late George F. Baer is still in force. The absence of any agreement as to production or distribution of coal allows full liberty to each of the companies. There has been much comment in the trade on the subject. It is feared that the tonnage enthusiasm may result in trouble if it continues. The Lehigh & New England, the new anthracite shipper, shipped 1,317,000 tons in the first eleven months and will be on the official list of coal transporters this year.

SHIPMENTS BY HALF YEAR PERIODS SINCE 1903

Year	First Half	Second Half	Calendar Year
1914	32,945,789	35,396,814	68,342,601
1913	34,851,854	34,217,774	69,069,628
1912	26,104,766	37,505,812	63,610,578
1911	35,309,583	34,644,716	69,954,299
1910	32,814,748	32,091,033	64,905,786
1909	31,957,730	30,012,155	61,969,885
1908	33,668,442	31,996,572	64,665,014
1907	32,884,595	34,224,798	67,109,393
1906	25,385,801	30,312,794	55,698,595
1905	30,716,997	30,693,204	61,410,201
1904	29,257,307	28,135,215	57,392,522
1903	31,884,952	27,478,878	59,363,830

PERCENTAGE SHIPPED BY DIFFERENT COMPANIES

	1896*	1910	1911	1912	1913	1914
Phila. & Reading	20.50	19.17	18.96	20.20	18.70	17.56
Lehigh Valley	15.65	17.25	18.02	18.54	18.84	19.22
C. R.R. of N.J.	11.70	13.13	13.18	13.12	13.16	13.04
Del., Lack. & West.	13.35	14.77	14.11	14.25	14.34	14.50
Del. & Hudson	9.60	10.14	10.30	10.00	10.27	10.70
Penna. R.R.	11.40	9.63	9.28	8.72	9.20	9.42
Erie	11.20	11.64	12.58	11.69	11.86	12.10
Ontario & Western	3.10	4.27	3.57	3.48	3.63	3.44

* Allotment made in this year.

STOCKS AT TIDEWATER AT THE CLOSE OF EACH MONTH OF THE PAST 5 YEARS

	1914	1913	1912	1911	1910
Jan. 31	591,094	375,566	521,283	711,877	869,757
Feb. 28	523,682	484,270	379,775	669,485	802,011
March 31	632,989	772,115	300,366	946,713	1,104,232
April 30	453,789	546,243	126,539	601,916	858,976
May 31	485,853	502,626	125,977	619,395	880,303
June 30	554,120	533,029	289,827	754,910	883,461
July 31	514,490	537,404	380,088	826,396	896,064
August 31	582,179	575,384	388,921	881,202	878,598
Sept. 30	645,699	589,690	417,360	908,785	862,693
Oct. 31	745,076	603,223	358,937	818,675	883,567
Nov. 30	811,198	603,031	346,013	754,062	801,735
Dec. 31	669,833	602,328	340,637	712,958	734,898

COMPARATIVE STATEMENT OF SHIPMENTS BY COMPANIES FOR THE PAST 4 YEARS

Company	1914	1913	1912	1911
Phila. & Reading	11,998,779	12,914,887	12,852,386	13,265,758
Lehigh Valley	13,136,759	13,011,370	11,791,601	12,603,000
Cent R.R. N.J.	8,924,936	9,092,433	8,342,477	9,218,802
Del., Lack. & W.	9,912,578	9,903,541	9,065,622	9,869,620
Del. & Hud.	7,313,541	7,094,258	6,361,238	7,206,731
Pennsylvania	6,434,937	6,351,756	5,548,193	6,494,733
Erie	8,268,585	8,192,352	7,435,697	8,800,179
Ont. & West.	2,352,486	2,509,031	2,213,382	2,495,476
Total	68,342,601	69,069,628	63,610,578	69,954,299

SHIPMENTS BY REGIONS

Year	Schuylkill	Lehigh	Wyoming	Total
1898	12,078,875	6,252,109	23,567,757	41,899,751
1899	14,199,009	6,887,909	26,578,286	47,665,204
1900	12,502.732	6,918,627	24,686,125	45,107,484
1901	16,019,591	7,211,974	30,337,036	53,568,601
1902	8,471,391	3,470,736	19,258,763	31,200,890
1903	16,374,790	7,161,783	35,723,258	59,362,831
1904	16,612,055	6,558,182	33,892,285	57,492,522
1905	17,703,099	7,949,205	35,857,897	61,410,201
1906	16,011,285	7,046,611	32,640,692	55,698,595
1907	20,141,288	8,329,953	38,633,452	67,109,398
1908	18,006,464	7,786,255	38,872,295	64,665,014
1909	16,864,147	7,532,271	37,573,467	61,969,885
1910	17,845,020	8,627,539	38,433,227	64,905,786
1911	19,375,369	9,775,018	40,805,912	69,954,290
1912	18,013,406	8,571,861	37,025,311	63,610,578
1913	19,338,870	9,342,583	40,388,175	63,610,578
1914	18,494,087	9,087,111	40,760,803	68,342,601

GROSS AND MARKETABLE OUTPUT SINCE 1881

	Gross	Marketable		Gross	Marketable
1881	25,572,160	23,437,241	1898	47,663,076	41,899,751
1882	31,358,261	29,120,026	1899	53,944,647	47,665,204
1883	34,336,468	31,793,027	1900	51,221,353	45,107,484
1884	33,175,756	30,718,293	1901	60,242,560	53,568,601
1885	34,228,548	31,623,530	1902	36,940,710	31,200,890
1886	34,853,077	32,336,362	1903	66,613,454	59,363,830
1887	37,578,747	34,641,018	1904	65,318,490	57,392,522
1888	41,624,611	38,145,718	1905	69,339,152	61,410,201
1889	50,665,182	35,817,093	1906	63,645,010	55,698,595
1890	41,489,858	36,615,459	1907	76,432,421	67,109,393
1891	45,236,992	40,448,336	1908	74,347,102	64,665,014
1892	46,850,450	41,893,320	1909	72,016,115	61,969,885
1893	48,185,306	43,089,537	1910	74,295,087	64,905,783
1894	46,368,144	41,371,200	1911	80,771,483	69,954,299
1895	51,785,122	46,511,477	1912	75,322,855	63,610,578
1896	48,523,267	43,177,485	1913	81,718,680	69,069,628
1897	46,974,714	41,637,863	1914 (est)	76,543,000	68,342,601

SHIPMENTS BY MONTHS FOR THE PAST 5 YEARS

Month	1914	1913	1912	1911	1910
Jan.	5,175,732	6,336,419	5,763,696	5,904,117	5,306,618
Feb.	4,121,451	5,674,169	5,875,968	5,070,948	5,031,784
March	5,164,703	4,909,288	6,569,687	5,996,894	5,174,166
April	6,072,164	5,966,189	266,625	5,804,915	6,224,396
May	6,281,553	5,995,742	1,429,357	6,317,352	5,679,661
June	6,130,186	5,970,047	6,191,646	6,215,357	5,398,123
July	5,391,857	5,487,852	6,285,153	4,804,065	5,202,059
August	5,483,743	5,369,900	6,576,591	5,531,796	4,996,044
Sept.	6,246,192	5,572,279	5,876,496	5,730,935	4,967,516
Oct.	6,444,476	6,338,194	6,665,321	6,269,179	5,622,005
Nov.	5,928,286	5,786,931	6,165,536	6,193,314	6,071,746
Dec.	5,702,258	5,662,618	5,944,506	6,115,427	6,231,578
Total	68,342,601	69,069,628	63,610,578	69,954,299	64,905,786

RANGE OF STOCKS FOR PAST THREE YEARS

	1914 High	1914 Low	1913 High	1913 Low	1912 High	1912 Low
Reading 1st pfd	89⅜	87	92½	82½	93¼	87½
Reading 2d pfd	93	80	95	84	101½	92
Reading common	172¼	138	171⅜	151⅜	179¼	148¼
Lehigh Valley	156¼	118	168⅜	141¼	185⅛	155⅜
Cent. R.R. of N.J.	315	300	362	275	395	305
Del., Lack & Western	406⅜	388	445	380	597	530
Del & Hudson	159½	135¾	167	147½	175½	162
Pennsylvania R.R.	115½	102½	123⅛	106	126¾	119⅞
Erie	32½	20¼	32½	20¼	39⅜	30
Erie 1st pfd	49⅜	32	49⅛	33⅛	57⅝	47⅛
Erie 2d pfd	40¼	26¼	41¼	28¼	48	38
Ontario & Western	31⅝	19⅛	33⅞	25¼	41⅜	29⅞
†Leh. Coal & Nav., etc.	84¾	72	93⅞	81	100	87⅞

† Phila. price, dollars per share; par $50.

DIVIDENDS PAID DURING THE PAST NINE YEARS

	'14	'13	'12	'11	'10	'09	'08	'07	'06
Rdg. 1st pfd	4	4	4	4	4	4	4	4	4
Rdg. 2d pfd	4	4	4	4	4	4	4	4	4
Rdg. com	8	8	6	6	6	6	6	4	4
Leh. Val.	10&2½	10	10	10	10	10	6	6	6
C. R. N. J.	8&4	12	12	8&4	8&4	10&2	8	8	8
D. L. & W.	10&10	10&10	20	* 10&10	10&10	20&66	10&10	10&10	10&10
Del. & Hud.	9	9	9	9	9	9	9	9	7
Penna. R. R.	6	6	6	6	6	6	6	7	7
Ont. & Western	0	2	2	2	2	2	2	2	2
Lh. C. & N. Co.	8	8	8	8	8	9&25	8	8	8

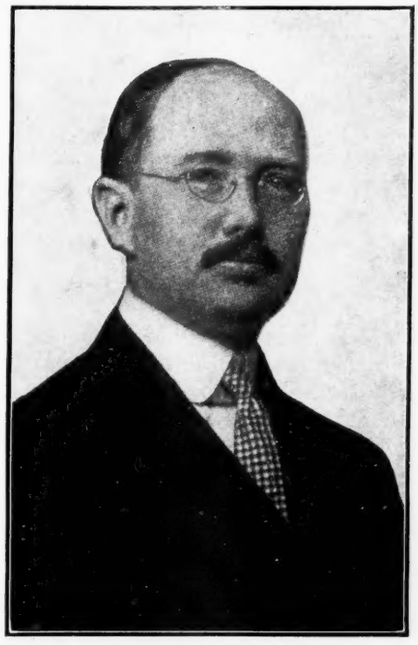
* And 35% in stock Lackawanna R.R.

Walter H. Clingerman

Walter Hicks Clingerman has been elected president of the H. C. Frick Coke Co., to succeed Thomas Lynch, who died Dec. 29, 1914. Mr. Clingerman has acted as general superintendent of the Frick company for a number of years.

His early education was obtained in the public schools of Altoona, Penn., where his boyhood days were spent. In 1885 on leaving school he secured his first position as an apprentice in the machine shops of the Pennsylvania R.R. Co. at Altoona.

Four years later, Mr. Clingerman was transferred to the office of the superintendent of motive power in charge of all the drafting work on new construction jobs. In 1895 the Pennsylvania R.R. Co. gave him a leave of absence to superintend the construction of car shops for the H. C. Frick Coke Co. and put car repairs on a piecework basis. This work consumed one year of his time, after which he returned again to the railroad company.



WALTER H. CLINGERMAN

In September, 1897, Mr. Clingerman became general foreman of the Everson carshops of the Frick company, and about a year later was appointed assistant general superintendent of all their mines. In February, 1904, six years later, he was advanced to the position of general superintendent of the H. C. Frick Coke Co., and served in that capacity until his recent appointment to succeed Mr. Lynch as president.

Mr. Clingerman is one of the most popular men in the Pennsylvania coke fields, and his advancement to the highest position in the Frick company meets with the general approval of coke men everywhere. He is the logical man for the job that was so capably filled by Thomas Lynch, and there is no doubt but that he will lend himself heartily and vigorously to the continuation of the admirable work on sociological lines so ably planned by his predecessor. The Frick company, in its relations with its employees, is a model corporation and one that might be used as a pattern by other concerns in different fields.

Walter Clingerman is 46 years of age. He is a director of the Madeira-Hill-Clark Coal Co. and of the Memorial Hospital, Mt. Pleasant, Penn. However, practically all of his time and effort in recent years have been devoted to the service of the Frick company. He is the sort of man who concentrates to the utmost on the work in hand, and we predict that the company he now heads will continue its successful course of development under his lead.

To Illustrate Anthracite-Mine Accidents

The coal-mining department of the Delaware, Lackawanna & Western R.R. is having prepared by the Edison Co. a series of moving-picture "plays" illustrating possible accidents in the mines, with the obvious corollary of how to avoid them. Some of the moving pictures of anthracite mining prepared by the United States Bureau of Mines may be used in conjunction with the Lackawanna films.

No effort is being spared in the Lackawanna's elaborate campaign for safety in the mines, and by stretching a wire to the miner's house these plays can be given with a small projecting machine right in his home. Where it is impossible to stretch a wire, storage batteries may be used for their home entertainments. The moral effect in promoting caution is the company's reward for the trouble and expense.

Prizes will be offered for the most vivid and instructive plays and these will be turned over to the "keg fund" of the locality which wins them. At many of the Lackawanna collieries the empty powder kegs which are returned in good condition are stored by the company, which credits 8c. to the fund for each keg, the exact amount received from the powder company for their return. These funds are devoted to paying sickness and death benefits and funeral expenses for the mine workers. They average from $1700 to $2000 a year.

New River Coal Co. Makes Big Deal

A deal of importance, which concerns a large part of the output of the New River Coal Co., of which G. H. Caperton, of Charleston, is president, with headquarters in that city, has been reported, whereby the New England Coal & Coke Co. secures an important tonnage from the mines of the New River Coal Co., which are located in the New River District of the West Virginia Smokeless fields.

The consummation of this deal means that the New River Coal Co. will sell a large block of its coal, or all the coal from its mines shipped into the New England States, to the New England Coal & Coke Co. for a period of years. This coal has heretofore been sold under contract to the Darrow-Mann Co., of Boston, who are controlled through stock ownership by the New River Coal Co.

The new tonnage that the New England Coal & Coke Co. will receive from the New River field through this contract will give it a supply of smokeless coal in the New England markets considerably in excess of 2,000,000 tons a year.

Editorials

The High Price of Coal Land

The Sibyl who tried to sell her books to Rome burned three volumes each time her offer was refused and then asked an unchanged price for those still remaining. A similar obstinacy is manifest in the sale of our coal lands.

For six years we have steadily raised the price of the coal land on the public domain. The acreage price of the lands sold has risen 132 per cent., an increase of 22 per cent. per annum, and even that inadequately represents the increases of valuation of the best coal lands. Meanwhile the sales have dropped from $636,663.18 in the fiscal year ending July 1, 1908, to $307,487.95 in the past fiscal year. Whereas in 1908 there were 303 entries, in 1914 there were 71 or barely one-fourth as many. In the first year almost five times as much coal land was sold from the public domain as in the last. So the American Sibyl has steadily raised prices as the chances of selling coal and other lands declined.

But the public, like the Sibyl, is satisfied, and the West, of course, must needs be also, as its people are clearly in a minority. A few weeks ago, an Easterner opened an address on Alaska with the words: "The people there think they own Alaska." They probably do, and the people in the West think they own the West. But they don't, as you can see by these sales and these prices.

The mother country, east of the Mississippi, still has a money interest in its colonies as the frequent use of "public domain" and "landlord" in government enactments and publications most clearly shows. We wish that at last there may come an awakening, and that the old folks of the East may learn yet to see that the young folks of the West know their own needs and rightly appraise their own difficulties. Regretful it is that old fogyism and absentee governmental management are keeping the West from its merited progress.

Retail Dealers Cannot Refuse Coal Shipments

A growing evil among Indiana retail coal yards to order coal from the mines and then after it is en route cancel the order and request the shippers to effect other disposition has caused some of the Indiana shippers to refuse to make any further shipments to consignees following this practice. Recently the R. C. Whitsett Coal & Mining Co., of Chicago, tested out a case of this kind in the courts of Fort Wayne, Ind., and won their suit.

It seems a coal dealer in Fort Wayne in the usual way ordered a car of coal from the Whitsett Coal & Mining Co., which was shipped promptly from the mines, and before it arrived at Fort Wayne the consignee refused to accept the shipment, stating that he was overstocked and could not use the coal. The Whitsett company refused to act on this request and the shipment went through to destination, as originally consigned, with the result that the consignee refused to accept the shipment upon arrival on account of quality. The suit was decided in favor of the plaintiff, that is, the Whitsett Coal & Mining Co., and judgment was given against the defendant for the full invoiced price of the coal, plus all expenses in connection with the suit.

The operators complain that Fort Wayne is an unsatisfactory city in which to sell coal because of the custom of dealers in that city to refuse shipments on one pretext or another and to ask for allowances which are uncalled for. This case shows that when a dealer orders coal from an operator he must accept it and not refuse it after it has been in transit. The law provides when coal is sold f.o.b. mines that title thereto passes to the consignee immediately upon delivery to the initial carrier for transportation, and the shipper's responsibility is ended, as the law does not make the consignor a guarantor of safe or due delivery, so that the consignee is the lawful owner of a shipment of coal so sold, after it leaves the mines.

If Coal Sold at over $32 a Ton

The Federal Industrial Relations Commission is liable to increase rather than diminish industrial discontent, and not the least of the trouble-makers are those excellent captains of industry like Henry Ford, who, lying in protected harbors, hint that there need never be a ruffled sea and that seasickness is entirely unnecessary.

But the cause of the success of Mr. Ford in industrial sociological work is revealed when he says that, in his establishment, capital of $2,000,000 manufactured $80,000,000 to $90,000,000 of product and *earned $25,000,000 of profits last year.* It is pertinent to inquire what relations these profits bear to the conditions in the coal industry.

The Census reports for 1909 show that $960,289,465 was invested in bituminous-coal mines. The product, as recorded by that Bureau, was 376,865,510 tons. Hence capital to the extent of $2.54 was needed for every ton of product sold.

Henry Ford and his associates multiplied their wealth 12½ times in the course of the year. That gain translated into the coal industry would involve a profit of 12½ times the capital invested in coal operations per ton of product or 12½ times $2.54, or $31.75. Thus every ton produced would have to pay a clear profit of $31.75. Roughly speaking, the market would have to buy coal at $32.75 in order that the coal operators might have as large an amelioration fund as Henry Ford and his associates.

Of course, objections will be made to this line of argument and we will anticipate some of them that our frankness be not impugned. The Ford factory, like the coal industry, does not always work at maximum pressure, but, of course, a large industry like coal mining, as a whole, is not speeded up like the Ford works. As a unit it is not so efficient. Moreover, whereas there is water in the form of excessive coal-land valuations in the coal industry, there is probably none in Ford's capitalization and two millions may not represent the true value

of the Ford plant. But nevertheless the figures are significant. When the automobile industry becomes overcrowded like the manufacturing of bicycles, probably Mr. Ford may find he cannot be so liberal and so feudal.

Meanwhile he exhibits well the generous instincts of American capital and his work will have an excellent effect if the public will only bear in mind that the conditions under which he operates are exceptional.

Who Gets the Promotion?

In deciding which is the best answer of the nine published last week, with reference to the cartoon problem "Who Gets the Promotion?" no provision was made for awarding the first prize of $10 in case two or more of the contestants were tied. We, therefore, wish to state that in such an event each and all of those participating in the tie will receive the full first prize of $10. As stated last week, the postal card vote closes Feb. 2, and the result will be published in our next issue, Feb. 6. If you haven't already voted, do so today; this is your last opportunity.

This Winter Marks the Finish of a Number of Middle Western Operations

It is currently reported that several of the older mines in the Indiana field may be shut down or abandoned because of inability to market their production under the prevailing highly competitive conditions. In Illinois it is more than likely that several of the present operations will not be hoisting coal at this time next season; in fact, they are only kept open now in the hope that enough winter weather may be left to warrant the shipment of coal at profitable prices. One operator in Indiana reports that scarcely 50 per cent. of the tonnage covered by contracts has been shipped so far this winter. There was a rush of orders about the holiday period, but just now the country dealer is taking practically no coal whatsoever.

Freedom of Speech

We have always been delighted with the freedom of speech prevailing in the Geological Survey. Even when it permitted George Otis Smith and George Ashley to write us scathing letters, we still felt such plainness of speech was creditable to the organization, for we object to the attitude that comment should not meet with a reply when the person or body discussed feels the criticism unmerited.

But we are still surprised at Mr. Smith's Gallic frankness of utterance. In his last report he says: "There is no indication that those who really wish to establish mines hesitate to buy at Government valuations." Yet a year ago, when five more sales were made and 1032 more acres were sold, Mr. Smith's chief, Franklin K. Lane, stated: "Our coal land is not being used under this plan (the classification of land and its vending at the price appraised) save under exceptional conditions of local and immediate demand."

We are glad there is a department where the subordinates are so free to take an opposing view to that of the official in charge. It speaks well for F. K. Lane, and convinces us that he is a man of broad views who can respect such a contrasting difference of viewpoint. Still we wish the Director of the Geological Survey used his freedom of speech to a more worthy end and could back it with better evidence.

The higher-priced land seems mostly to have been sold in 40- and 80-acre plots. Those who have experience in mining know that acreages so small are but rarely bought for operating purposes unless adjoining larger areas. Coal land is often bought for saloon and town sites, and consequently the small size of the areas sold at any one definite price is suggestive of the real purpose of the purchaser.

The Tidewater Coal Situation

The prominent feature in the Eastern coal markets this week is the sharp advance in water freights along the coast. Unfavorable weather during most of the month has shortened the supply of barges and sailing vessels that were available, and now the insistent demand for tonnage off-shore at "war rates" has made it plain to the coal trade that rates are up for the season. What the full effect will be it is too early to say, but the strenuous efforts of a week ago to close contracts on Southern coals have abated.

No prudent shipper now cares to name a delivered price without transportation in hand; the situation is too full of uncertainty. The range of freights is getting so high that buyers will probably prefer taking chances of a drop later in the season, for except in cases where plants are directly on tidewater there is still the possibility of taking Pennsylvania coal all-rail.

It is hard to see wherein vessels are likely to be in any better supply. Those closed on time charters to South America and to the Mediterranean are sure to be away for long periods, and unless a considerable tonnage of the medium-sized type comes from off the lakes most of the Pocahontas and New River agencies are likely to find it difficult to secure transportation for their coastwise trade.

That Elusive "Boom" in the Middle West

The long expected industrial revival scheduled for the first of the new year has certainly not materialized to the extent anticipated. In the Middle West for instance, there have been a great many statements in the daily press that the business situation has shown signs of marked improvement but it is not apparent to the coal man. However, there are certain movements afoot, within the coal trade there, to better its condition; these are making progress and may gain such momentum by another season as to have a decidedly favorable influence on prices and general selling conditions.

The coal operators can find their own remedies for the major portion of the evils which have existed for several years past if they will adopt coöperative methods, like those prevailing in other industries here and abroad.

A side-light on the export trade is the arrival of coal from England. Several steamers coming to Portland, Maine, for instance, to take horses and supplies for the British army have brought coal as ballast in thousand-ton lots, a fact that tends to show that England is not short of fuel and is shipping coal regularly in most directions.

Sociological Department

A Miners' Tribune

The Colorado Fuel & Iron Co. has appointed a representative to be a link between the employees and the higher officials and to take care of the interests of the former. He will travel from mine to mine, and where misunderstandings or grievances cannot be adjusted between the employees and the local management, it will be his duty to take up such matters and adjust them.

David Griffiths, the man for this important post, has large acquaintance with the employees of the company and has a known sympathy with them which peculiarly fits him for the work he has to do. With Mr. Griffiths to see that justice is done, no grievances the miners may have will fail to be redressed. In fact, he will really be J. F. Welborn's representative in the field.

Some Aids to First Aid

By Frank S. Davis*

After the prizes for the annual contest have been awarded, the entertainments are over and the brass band has gone home—the next meeting of the First-Aid Club is apt to be poorly attended. There is a sudden slump in interest, and unless the doctor and the "super," together with the mine foremen, put forth unusual efforts, it is hard to revive the waning enthusiasm, at least until the next "annual" looms imminent. Yet, if first aid is to become as large a factor as it should be; if it is to be so generally comprehended that an accident cannot occur without having someone near who understands its principles; if the victim is to have his sufferings alleviated at the earliest possible moment, interest and enthusiasm must be maintained throughout the year.

Intermittent Interest in First Aid

"Keeping everlastingly at it brings success" is an old saying and a true one. But keeping everlastingly at the same thing, in first aid, gets monotonous. It is necessary to vary the routine, to get new incentives, in order to enlist new men, and keep the interest alive and vital all the time. New schemes must be devised, and new devices tried. The team that has won the trophy three successive years is a valuable organization, and we are all proud of it, but if each member of that team were engaged in training new beginners, of how much greater value would the work of the team become?

Some methods which I have tried are proving successful, and it is with the thought that they might be suggestive to others that this article is written.

After one annual contest here, there was an immediate cessation of interest. The First-Aid Club languished, and there was nothing doing. The hall was only open on special and rare occasions, and then the meetings were slimly attended.

To remedy these conditions, a meeting of the mine foremen, who comprise the executive board of the First-Aid Club, was held. A concert was given, plenty of talent being available, and a fund of about two hundred dollars was thus created. A janitor was hired, and the first-aid hall was open, warmed and lighted, every night. Then a "smoker" was given, and a free-for-all meeting was announced. At this meeting dues were voted, 25c. a month, a secretary, treasurer and president elected, and some enthusiasm aroused. New teams were organized, and everything put in shape for a vigorous first-aid campaign.

The annual contest was held on Labor Day, with five full teams competing. Out-of-town judges were selected, and there was no unpleasant aftermath, although competition was keen, and the contest very close.

Better Safe than Sorry

In addition to the cup and cash prizes, all members of the teams were presented with the company's first-aid buttons. These are handsome little emblems, in blue and gold, with the motto, "Better Safe than Sorry," encircled by the name and location of the company. The men were told that these buttons could be procured only by taking first-aid training, and a Thanksgiving contest for beginners only, with buttons for prizes, was announced.

The contest came off in due time, and the committee in charge added some cash, raised by subscription, to increase the interest. Each team was composed of five men and a captain, only the latter being a "button" man, and even his activities were strictly limited to instructing his men. Three teams competed, and all members were adjudged worthy of receiving buttons. There are now about fifty "button men" in the camp, and a surprising amount of pride is taken in the tiny decoration.

Not a Cup in a Case but a Sign at the Mine

The next contest is to be a free-for-all affair. A conspicuous sign, containing the words "Champion First-Aid Team," with a reproduction of the first-aid buttons at either end, will be allotted to the winning team. This sign will be placed over the top of the manway at the mine from which the team came, and must be held by that team against all comers.

In other words, if the team from No. 1 mine wins the contest, it must accept all challenges for a certain period, and maintain its supremacy during that time, if it would retain the sign. If it succeeds in doing this, the date will be added, "for the Year 19—," and the sign will remain at No. 1.

If No. 2 mine wants the sign, and has a team which they think can beat No. 1, a contest will be arranged on six weeks' notice, and if No. 2 team wins, the sign goes up at No. 2, under the same conditions. It is hoped that this will stimulate and maintain a keen rivalry between the different teams in the camp. These contests are all in addition to the regular annual contest for a handsome loving cup, occurring each Labor Day.

When the keen edge of the rivalry created by the sign wears off, something else will have to be devised, in a somewhat different line. At present I have no idea what

*Mine superintendent, Superior Coal Co., Superior, Wyo.

this may be, but I have faith that some other scheme will present itself during the interval, so that interest may be again aroused, and the large and enthusiastic membership will continue to grow and thrive.

Cash Prizes for Safeguarding Lives

At every colliery operated by the Coal-Mining Department of the Delaware, Lackawanna & Western R.R., placards have been posted offering $100 in cash prizes for the most valuable and practical suggestions on the prevention of accidents. The first prize is $25; the second, $20; the third, $15; and there are two of $10 and four of $5 each.

The suggestions must consist of not over 1000 words and are to be deposited in one of the 35 large boxes installed at each colliery, and labeled "Safety-First Suggestions."

This is only part of an elaborate and comprehensive plan for the promotion of safety in the mines. The Lackawanna has formed a series of committees to have charge of all safety work and devices and through which all suggestions will be sifted.

Committees of Safety

The central committee consists of the superintendent, who is chairman; the general attorney, who is secretary; the chief engineer, electrical engineer, superintendent of construction and repairs, superintendent of washeries, the superintendents of the four districts into which the Lackawanna operations are divided, and a special engineer.

Next in the system come the four district committees, consisting of the district superintendent, assistant district superintendent, district mining engineer, district electrician, district mechanic, inside foreman, fireboss, a miner, a track layer and a runner.

In addition to this there is a mine committee for each separate district in the mines for which an inside foreman is responsible. These committees consist of the fireboss, safety inspector, a miner, a track layer, a timberman and an electrician inside the mine, and a breakerman, a prop cutter, a carpenter and an engineer from among those employed outside.

The first meeting of the district and mine committees of districts 1, 2 and 3 was held on Wednesday, Jan. 13, at the Railroad Y. M. C. A., in Scranton, and that of the district and mine committees of district 4 convened at the Wilkes-Barre Y. M. C. A. on Friday, Jan. 15.

Frequent Meetings to Consider Many Suggestions

The mine committees will meet frequently, probably once a week, and their secretaries will send the notes of their meetings to the district committees. These will meet every two weeks and their secretaries will send their reports to the central committee which will meet monthly.

This coöperation between the officials and employees of the company is expected to have a markedly beneficial effect. The keys of the boxes in which the safety-first suggestions will be deposited are held by the central committee, so there is no danger of their being tampered with in transit and every suggestion will reach headquarters. The simple and more inexpensive plans will be handled by the local committees, and the more elaborate will be passed upon by the central committee.

Copies of the celebrated Lackawanna Safety-First book with photographic illustrations of the right and safe and the wrong and dangerous way to do everything in the mines have been furnished to every member of every committee.

The first joint meeting of the Central and District Safety-First Committees was held in Scranton on Jan. 4, and several homely sayings and aphorisms relating to safety were suggested.

Christmas at the Company Store

The United Supply Co., of West Virginia, and the Union Supply Co., of Pennsylvania, subsidiaries of the United States Steel Corporation and its affiliated coal companies, dressed up a Santa Claus in all the 71 stores at the coal mines, and distributed candy to the children, in all giving away 22 tons. This was put up in appropriate Christmas boxes, and to it were added oranges, apples and nuts.

However, Santa, in these mining towns was divested of his recognized characteristic of secrecy, for he was escorted, at least in Gary, W. Va., by the village band. The store companies mentioned sell turkeys to every one at cost at both Thanksgiving and Christmas, and at Easter, eggs and chickens are likewise sold without profit.

Anthracite Region Prosperous

At no time in its history has the anthracite region of Pennsylvania enjoyed such a period of peace and prosperity as that of the last ten years. Edward W. Parker says in his "Production of Coal in 1913" published by the United States Geological Survey that it requires no stretch of the imagination in order to believe the foregoing claim when the financial concessions made by the operators are taken into consideration.

The first of these was the establishment in 1901 of the summer discounts which have resulted in a marked increase in the number of days the employees have been able to work, and in the uniform distribution of the shipments throughout the twelve months of the year. From a minimum of 195 working days in 1906 the average has ranged as high as 257 in 1913, with a mean average for the last ten years of 220 days. In 1913, the railroad shipments reported to the Bureau of Anthracite Coal Statistics amounted to 69,069,628 long tons, of which 50.3 per cent. were sent out during the winter months and 49.7 per cent. in the summer months, thus distributing employment in the anthracite region evenly throughout the year.

Wage rates since 1902 have been advanced 21 per cent. (10 per cent. in 1902 and 10 per cent. more in 1912), and as the average working time in that decade exceeds that of the previous one by 23 per cent., it may be computed that the average yearly earnings in 1913 were nearly 45 per cent. more than before the spring reductions went into effect and before the strike of 1902 resulted in the first 10 per cent. advance in wages. Thus the mine workers are now getting both more work and more pay.

Discussion By Readers

Mining Laws, Legislation and Mine Regulations

Letter No. 23—The discussion of needed mining laws and legislation grows more and more interesting as it advances; and many important points have developed that should be given attention in the framing and revision of mining laws, in the different states. One point that is of great interest in Pennsylvania relates to the danger attending mining operations in oil and gas fields.

In Greene County, of this state, there are thousands of acres of virgin coal that are about to be developed. The fact that countless oil and gas wells penetrate the coal strata, in this section, makes the work of coal mining particularly hazardous. These wells are from 1500 to 2000 ft. in depth; and, since the Pittsburgh seam of coal outcrops on the western bank of the Monongahela River and dips west, there is absolutely no protection afforded against the entrance of gas through these wellholes into the mine workings when this coal is being developed.

In most cases, a 6- or 7-in. casing has been placed in a 12- or 14-in. drillhole, and a packer-ring, or something of the same nature, is supposed to have been placed around this casing, at the bottom, to prevent the gas from circulating about the outside of the pipe.

Discussing this matter with a life-long resident of the section, I was told that when oil was worth as much as $15 a barrel, many property owners would drill a hole on their land, which would yield from 2 to 3 bbl. of oil per day. As a rule, no casings were inserted into these holes. As oil became more plenty and the price fell, many of these private wells were abandoned, because the returns were insufficient to warrant their being maintained. In most instances, these wells have been forgotten and their location lost.

In the section of country to which I refer, there are two gas-bearing strata or sands, namely, the "Dunkard" and the "Big Injun." When boring for oil, it was necessary to bore through these strata. In boring for gas, in order to get a heavy flow, it was necessary to bore to the Big Injun stratum, no attention being paid to the gas coming from the Dunkard sands. I am informed that the gas pressure ranges from 20 to 50 lb. gage. That such a pressure of gas would prove a serious menace in mine workings to which they might gain access is certain. I am informed that one of these gas wells is supplying sufficient gas for use in an eight-room house.

I recall two instances where such wells were struck while driving rooms in the mine. This was due, in one instance, to an error of the mine foreman in locating the hole on the mine map; but, fortunately, this proved a dry well, having been plugged with cement. In the other instance, the trouble was due to an error of the engineer, who failed to record the location of the hole on the surface. In this case, although there was a heavy pressure of gas recorded in the casing, no gas was issuing from the hole when struck. Later, however, this hole gave considerable trouble from gas coming from the Dunkard sands, due to a faulty packer-ring.

It seems quite unreasonable to compel coal operators to leave a large reserve of, say 40 or 50 ft. of solid coal around each of these wells, instead of compelling the gas companies to take proper precautions when boring the holes, so as to prevent the escape of gas therefrom into the workings of a future mine. In my opinion, all abandoned gas or oil wells should be filled with cement so that it would completely surround the casing throughout the depth of the hole. I believe this would go far toward preventing serious disasters arising from the presence of these holes. I hope that this matter will receive the attention it demands at the hands of the law makers that the hazards of mining may be reduced.

D. W. S.

————, Penn.

Letter No. 24—In discussing the question of mining laws, John Verner, in his Letter No. 16, COAL AGE, Jan. 2, p. 26, presents some very interesting facts in regard to interstate mines. Those who followed the discussion of the certificate law, in COAL AGE, something over a year ago, will recall that attention was drawn to similar conditions to those described by Mr. Verner.

The problem discussed at that time, however, did not relate to the workings of a single mine extending across the border into another state; but related to the certification of mine foremen in one state differing from that in a border state. Attention was drawn to the fact that a mine foreman holding a certificate in one state could not attempt to hold the same position in another state, by virtue of such certificate, even though the mines in question were of the same character and their workings were adjoining each other, in the same seam.

In my Letter No. 8, COAL AGE, Vol. 4, p. 988, discussing the certificate law, I suggested the *classification of mines*, and cited the attempt then being made in West Virginia to classify those mines as "nonhazardous," "hazardous" and "extra hazardous." In his Letter No. 14, COAL AGE, Jan. 2, p. 25, John Rose informs us that the mining laws of Tennessee provide for the examination of foremen in four separate classes, A, B, C and D. It seems to me that some such classification of *mines* should be made by Federal legislation, or by providing a uniform standard in the mining laws of the coal-producing states. In my opinion a similar classification should apply to all legislation relating to safety in mining. While I would not carry this classification to extremes, I believe that it should be so drawn as to make possible the proper safeguarding of life and property in and about mines, without imposing undue hardships on the operators, certified mine officials, or miners. I would suggest that such a classification should have reference to mines as being "gaseous," "nongaseous" or "dusty," and should specify with respect to the roof conditions as being "safe" or "treacherous."

I believe fully in uniform state examinations for the positions of mine foreman, fireboss, etc., and in a legal

provision for a suitable interchange of certificates issued in different states. A foreman who is competent to take charge of a mine in *one* state is certainly competent to take charge of a mine presenting the same general conditions in *another* state.

I agree fully with Mr. Rose's suggestion that a foreman holding a certificate of *any* class should be permitted to act as assistant foreman in the next higher class. With Mr. Rose, I believe that this would give him an opportunity to gain the experience and training that would enable him to secure the higher certificate. Such a provision, by law, would in no way lower the standard of safety, as the responsibility and authority would still rest upon the foreman in charge.

I do not believe in lowering the standard of examinations for certificates of competency. The man who is to be held responsible for the safety of mine operations should be qualified for such position by education and training, and his character should stand the necessary test. The law should provide for the revocation of a certificate, in any position of responsibility, on sufficient proof of drunkenness, neglect of duty, or other act of incompetence.

In respect to interstate mines, I would suggest that state laws should provide for the inspection of the entire mine by one inspector only. I would place the whole mine under the jurisdiction of the inspector of the state in which the surface equipment of the mine is located. Where two inspectors of different states are obliged to coöperate in the inspection of the same mine, it would not always be possible to adjust matters as easily as was done in the case cited by Mr. Verner.

In closing, permit me to say that all the various phases of coal mining should be discussed at this time. I gladly welcome criticism or further comment on my suggestions. Legislators cannot be expected to be as familiar with mines and mining operations as those who are connected with the industry; and the purpose of COAL AGE, in this discussion, I understand, is to put before law makers such a summary of the important needs and requirements as will enable them to act intelligently. To this end, the hearty coöperation of all practical men engaged in mining is solicited.

G. N. LANTZ.

New Straitsville, Ohio.

Letter No. 25—In reading the interesting letters bearing on the question of mining laws and legislation, I am persuaded that, generally speaking, the present mining laws cover many important points; and that if these laws were strictly obeyed greater safety in mining would result. It is quite obvious to everyone, however, that there is a bad kink at present existing between the inspector, superintendent and mine foreman. In too many cases, the orders issued from the office fly off at a tangent, so to speak, and are absolutely lost before reaching their point of application.

As has been clearly shown, the position of mine foreman is, in too many instances, an anomalous one. Practically, this individual is 90 per cent. a company man and 10 per cent. a government agent. He is, in fact, a "bumping block" between the inspector and the company; and, in this respect, is admirably placed to act as receiver-general for knocks coming from both directions. The company is too prone to regard the mine foreman as the responsible party in respect to the compliance of mining operations with the mining law, while at the same time withholding from him their support and coöperation in this regard. Indeed, the ability of the foreman to successfully dodge an issue with the mine inspector makes him, too often, more valuable in the eyes of his superintendent.

As an illustration of the lack of support of and cooperation with the foreman, on the part of the company, in the matter of carrying out a mine inspector's orders, let me suggest a common instance, as follows: The mine inspector visits the mine, and, after making his examination, orders the mine foreman to make certain improvements to comply with the law. The improvements will necessitate an outlay of, say $200 or $300. The foreman appreciates the benefit to be derived therefrom and is as anxious as the inspector that the work be done at once. It is necessary, however, that the superintendent authorize the work before this can be done; and his comment on the inspector's order is, "We have too much dead-work expense on this pay, and we will let that matter go for the present." As a result, the inspector finds on his second visit that the work has not been done and threatens the foreman with prosecution if the order is not complied with immediately. This is a quite frequent occurrence at the present day.

While there has been much discussion of this knotty question, few remedies have been suggested for its amelioration. In order to stimulate thought along this line, I offer the following suggestion, in the hope that it may lead to a practical solution of the problem and prove a benefit to all concerned, particularly the mine foreman, who at present occupies an extremely nebulous position. The suggestion is as follows:

Mine inspectors' orders should always be written in duplicate, on properly prepared forms supplied to him by the government. Such orders should state, in clear, concise terms, the particular improvements required in order to comply with the law. The mine foreman should be required to read the order and sign his form in the presence of the inspector, thereby signifying that he fully understands what is required. The order, in duplicate form, and signed by the mine foreman, can then be handed by him to the superintendent to obtain his authorization that the work should be commenced and completed at a certain specified date. In case the work should not be accomplished in the time specified, it would then be possible to trace and fix the responsibility on the proper party. Such an arrangement, or a similar one, would certainly be fair and just to all; and anyone who would object to its adoption would probably stand watching.

I want to refer, here, to a similar condition as existing between the mine foreman and the miners in his charge. This condition is well illustrated by the instance cited in Letter No. 8, COAL AGE, Dec. 12, p. 958. Referring to a fatal accident, the correspondent states as follows:

> It is claimed by the mine foreman that he directed the man, an hour before the accident occurred, to set props under the roof as it appeared to be unsafe. Having done this, he proceeded to inspect other working places and was so engaged when news reached him of the accident.

In this case it appears that the mine foreman was prosecuted by the mine inspector for not staying and seeing that his (the foreman's) orders were obeyed. The lesson taught by this instance is that, while the foreman probably instructed the miner, as he claimed, he had no

proof that he had given the order to set the props, and merely made this claim to shield himself from any apparent neglect of duty on his part.

The general adoption of some form of compensation law in most of the coal-mining states, today, makes it more necessary than ever that mining laws should be so written as to fix the responsibility for neglect of duty as well as for any accident, on the proper party. In the case cited, if the mine foreman gave the order and the accident occurred after a reasonable time for the work to have been done by the miner, the responsibility clearly rests on the victim of the accident. On the other hand, if no order had been given by the mine foreman, the responsibility for the accident clearly rests on that official.

In order to avoid the quandary and fix the responsibility in such cases, I would suggest that all orders of the mine foreman should be delivered in writing to the miner, the order to specify the time of the day and the date when given, and be nailed to a post in the miner's room, after being signed by the miner himself. The law should fix a penalty for the removal of such an order from the post by any unauthorized persons. This would provide the necessary evidence required to fix the responsibility of a possible accident that might occur as a result of the neglect of a miner to comply immediately with the orders of his foreman.

I believe, also, that the time will come when, in order to secure the greatest immunity from accident, due to explosions of gas and dust in mines, a law will be placed on the statute books of all coal-producing states, prohibiting the use of open lights in *all* mines. While I realize that a host of mining men would oppose such an enactment, I am fully convinced that every intelligent mining man should favor such a law.

SUPERINTENDENT.

Pittsburgh, Penn.

The Foreigner in Mining

Letter No. 14—My special attention was drawn to Letter No. 13 in the recent discussion of The Foreigner in Mining, COAL AGE, Jan. 16, p. 137. There has been much talk over this subject, with the result that the coal operator or the officer in charge begins to feel that, in the future, a foreign miner or laborer will be of better value to him than an American-born miner, because he does more labor for less money, and as writer Mr. Wesvania points out this class should be Americanized and become good citizens and they would be better workers.

But this seems to be a hard problem to solve, because naturalization laws require an applicant for citizenship to live in one place for five years and to furnish witnesses that have known him for five years. My personal experience is like that in Letter No. 12, and it is a fact that foreigners are not treated in the same manner as American-born miners. For example, Johnny got wet place in mine, and hard push-cars; boss come in his room for inspection; Johnny complains that he cannot make enough to feed his family; boss make promises that whenever he finishes his room he will give him a good, dry place. So Johnny is compelled to work in the wet place and got less cars than his American fellow workmen. Then he put up a kick that he was not given an equal turn by the drivers; and result was that a driver called him a "Hunkey" and told him to "shut up or move out." It was different with Willie. He came and got the job. Boss took him to Johnny's place and advised him how he could do with this place, and gave him 50c. yardage and a free turn.

In my own case I had spent my money for two patents (U. S. A. and Canada) and became penniless. In the mine, I was treated same as Johnny; and appeared before the superintendent and asked him to give me just enough to keep my family. I showed him that boys from town were working every day while those in company houses are left behind and only get work enough to pay rent. So they feel that they are not treated as American labor.

The writer of Letter No. 13 says that "many foreigners come to this country for the purpose of making easy money in a short time," and "are sending this home to pay for the farm." That is a fact; but he fails to show *why* they come in such numbers that every mining camp is so crowded, in nearly every state. It is because they do not feel *free* in their native country; and so they are forced to seek freedom, liberty and higher wages for their labor here. Back home every able man is paid for his day's work (from sunrise to sunset) about 2 kronen and 40 fillers (48c.), which is the highest wages, and only paid on farms, during the summertime. Many coal operators employ these men in the mines, as low-class labor; but they are always willing and able, and work in good faith. Education is needed; but how?

About 50 per cent. of all foreign miners have properties and families or parents in the old country, and they are just waiting for the war to cease to bring them over. The other half would gladly become Americanized if they could do so according to law. One thing is true and that is our men (foreigners) do not enjoy the short-day work (8-hour day). Further, if you want to make them progress in education, you must clear the mining camps from booze and forbid to ship any intoxicating drink, and you will find that every wheel will be running right. Also, foreigners don't look to furnishing their homes elegantly, but they enjoy good meals and common, cheap clothing, with the intention of saving money for old age. I will gladly give more facts, if desired, as I am well acquainted with all this class of my countrymen and know their habits in every respect.

JOHN MAJER.

Garrett, Penn.

Letter No. 15—In his Letter No. 11, COAL AGE, Jan. 2, p. 27, Charlton Dixon, either deliberately or unwittingly, misapplies my reasoning in the analysis I offered of the character of the class of foreigners coming to America. Mr. Dixon styles my reasoning as being *"a priori,"* or from cause to effect, instead of *analytical* or from effect to cause.

I have stated, as a fact derived from years of personal intercourse and study, that Latin-Europeans are, as a class, morally perverted. This is an effect. In the study of probable causes, I find that mal-government and mal-instruction are both productive of moral perversion; and, therefore, conclude that the Latin-European has been subject to these influences, which have formed his character.

The same conclusion could also be reached by reasoning *a priori* from the same cause. As long as the foreigner is subjected to mal-government and mal-instruction, so long will he remain in the same moral condition. Since such a cause does not align with the principles of

American society or American citizenship, it is immaterial to the truth of this proposition whether the effect be the direct or indirect result of the cause; it proves the conclusion.

Mr. Dixon's intimation that my statements are inimical to the foreigner is true only in the sense that the physician's diagnosis is inimical to his patient. If to express a vital truth be *inimical,* to be silent would be *criminal.*

In support of his statement that the foreigner becomes as good a coal miner as the American miner of 25 or 30 years ago, Mr. Dixon quotes the enormous coal production of the present time. He seems to forget that coal mining was then, practically, an industry of manual labor and personal skill on the part of the workman; while today it has become a mechanical industry in which the workman is regarded as a part only, but not a very essential part, of the machine; and the present time does not, therefore, offer the same opportunity for the development of skilled miners.

Mr. Dixon's reference to the "industrial supremacy" of this country being so dependent on foreign labor is no doubt highly flattering to that class; but would it not be more pertinent to ask, what are we going to do with the foreigner? If the proper answer to this question is not found it may soon be necessary to ask, what will these foreigners do with us?

In reference to my "recanting" when I say that the foreigner "is still capable of mental education," I would remind Mr. Dixon that the education of which I consider the foreigner incapable is that of his perverted moral nature. Education may be mental, moral, or physical, all of which are necessary to the full development of man.

In his closing remarks, Mr. Dixon claims to see, in the loyalty displayed by many foreigners now returning to the defense of their homeland, "excellent material with which to make good American citizens." This loyalty of the foreigner is exhibited with respect to foreign institutions; but to become an American citizen, he must foreswear allegiance to all foreign potentates and take oath to support the Constitution of the United States which, by that act, he adopts as his own, together with the institutions that the Constitution considers sacred. From Mr. Dixon's previous arguments, one is forced to conclude that this loyalty of the foreigner is demonstrated in support of the very principles that he is supposed to have found unbearable in his own country—and this after enjoying years of the blessings of American freedom. I would ask, Do these facts reveal the foreigner as an element for absorption into American social and political life?

I. C. PARFITT.

Jerome, Penn.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

This principle known as the **law of tangents** can always be applied when one angle and the including sides are given, to find the remaining angles and side of a triangle.

Example—Given, in a triangle, a = 300 ft., b = 500 ft. and C = 120 deg.; to find A, B and c.

Solution—The two unknown angles are first found by applying the law of tangents to find their half difference, which added to their half sum will give the greater; or subtracted from their half sum will give the lesser of the two angles. In this case, since b is greater than a; the angle B is greater than the angle A; and we have

$$Tan\ \tfrac{1}{2}(B-A) = \frac{b-a}{b+a}\ tan\ \tfrac{1}{2}(B+A)$$
$$= \frac{500-300}{500+300}\ tan\ \tfrac{1}{2}(180^\circ - 120^\circ) = \frac{200}{800}\ tan\ 30^\circ$$
$$= \frac{1}{4} \times 0.57735 = 0.14434$$

and ½ (B — A) = 8° 13′. Then, since ½ (B + A) = 30 deg.,

$$B = 30^\circ\ 00' + 8^\circ\ 13' = 38^\circ\ 13'$$
$$A = 30^\circ\ 00' - 8^\circ\ 13' = 21^\circ\ 47'$$

Then, applying the law of sines, to find c, remembering that sin 120° = sin 60° = 0.866,

$$c = \frac{sin\ C}{sin\ B} \times b = \frac{sin\ 120^\circ}{sin\ 38^\circ\ 13'} \times 500 = \frac{0.866 \times 500}{0.6186} = 700\ ft.$$

2. The principle known as the **law of cosines** can, also, be applied, in the solution of triangles when one angle and the including sides are given, to find the remaining parts. This principle is expressed by the formula

$$a = \sqrt{b^2 + c^2 - 2\ bc\ cos\ A}$$

In applying this formula, the letters can be changed correspondingly to conform to any given case. Thus, in the last example where a = 300 ft., b = 500 ft. and C = 120 deg.; and it is required to find c, A and B, we have the following:

Solution—Here, C = 120 deg.; and cos 120° = —cos 60° = —0.5; hence,

$$c = \sqrt{a^2 + b^2 - 2ab\ cos\ C}$$
$$= \sqrt{300^2 + 500^2 - 2 \times 300 \times 500\ (-0.5)} = \sqrt{490{,}000} = 700\ ft.$$

Then, applying the law of sines to find the angles A and B,

$$Sin\ A = \frac{a}{c}\ sin\ C = \frac{300}{700} \times 0.866 = \frac{3 \times 0.866}{7} = 0.3711$$

and A = 21° 47′. Then, since A + B = 180 — 120 = 60°,

$$B = 60^\circ\ 00' - 21^\circ\ 47' = 38^\circ\ 13'$$

3. There is still a third method of solution that applies when one angle and the including sides of a triangle are known. This method embraces the three circular functions, sine, cosine and tangent; and may be styled the **law of circular functions.** It is expressed by the formula

$$Tan\ A = \frac{a\ sin\ C}{b - a\ cos\ C}$$

As before, the letters of this formula can be changed correspondingly, giving the following:

The Coal Age Pocket Book

Solution—Given a = 300 ft., b = 500 ft. and C = 120 deg.; sin 120° = sin 60° = 0.866; and cos 120° = —cos 60° = —0.5; and substituting these values in the last formula, we have

$$Tan\ A = \frac{a\ sin\ C}{b - a\ cos\ C} = \frac{300 \times 0.866}{500 - 300\ (-0.5)} = \frac{259.8}{650} = 0.3997$$

and A = 21° 47′. Then, as before, B = 60° 00′ — 21° 47′ = 38° 13′.

The remaining side c is then found by applying the law of sines, as previously explained.

Case 4—When the three sides of the triangle are given, to find the three respective angles, it is only necessary to apply the law of cosines, solving the formula previously given so as to express the value of the angle A, in terms of the sides a, b, c; thus,

$$Cos\ A = \frac{b^2 + c^2 - a^2}{2\ bc}$$

Example—Taking the same triangle as in Case 3, the three sides are given as follows a = 300 ft., b = 500 ft. and c = 700 ft.; the angles A, B, C are found thus:

Solution—Substituting the given values in the last formula given above,

$$Cos\ A = \frac{b^2 + c^2 - a^2}{2\ bc} = \frac{500^2 + 700^2 - 300^2}{2\ (500 \times 700)} = 0.92857;\ A = 21^\circ\ 47'$$
$$Cos\ B = \frac{a^2 + c^2 - b^2}{2\ ac} = \frac{300^2 + 700^2 - 500^2}{2\ (300 \times 700)} = 0.78570;\ B = 38^\circ\ 13'$$
$$Cos\ C = \frac{a^2 + b^2 - c^2}{2\ ab} = \frac{300^2 + 500^2 - 700^2}{2\ (300 \times 500)} = -0.5;\ C = 120^\circ$$

Or, having found two angles, as A and B, the remaining angle C can be found by subtracting their sum from 180 deg.

$$C = 180^\circ - (21^\circ\ 47' + 38^\circ\ 13') = 120^\circ$$

Case 5—When two parts of a **right triangle** are known, other than the right angle (90°), the remaining parts are found by applying the following principles or formulas:

1. The square of the hypotenuse is equal to the sum of the squares of the two sides (altitude and base).

Let a = altitude, b = base and c = hypotenuse; then,

$$a^2 + b^2 = c^2$$
$$a = \sqrt{c^2 - b^2}$$

2. The laws of sines, cosines and tangents all apply to right triangles; but it is important to remember that, since C = 90 deg., sin C = 1; and cos C = 0. Also, since A + B = 90, tan ½ (A + B) = tan 45° = 1.

By the **law of sines,**
$$a = c\ sin\ A$$
$$b = c\ sin\ B$$

By the **law of cosines,**
$$a = c\ cos\ B$$
$$b = c\ cos\ A$$

By the **law of circular functions,**
$$a = b\ tan\ A$$
$$b = a\ tan\ B$$

By the **law of tangents.**
$$tan\ \tfrac{1}{2}(A - B) = \frac{a-b}{a+b}$$

Inquiries of General Interest

The Formation of a Flame Cap

I was much interested in the answer given to the inquiry in regard to the formation of a flame cap, COAL AGE, Dec. 12, p. 961. It seems to me, however, that this question, in its relation to the detection of gas in mines, by means of safety lamps, will warrant a yet further investigation.

It has long been known that a certain type of safety lamp, burning gasoline, will generally show a very distinct cap even when burning in pure air containing no gas; and it is practically impossible to distinguish this cap from one formed by the presence of marsh gas (CH_4) in the air surrounding the lamp. I may say that it would require an acute observer and one having a remarkably good eyesight to distinguish between the cap formed on the flame of such a lamp burning in pure air, and the cap formed on a lamp burning ordinary sperm or cottonseed oil, when placed in air containing a small percentage of marsh gas or in the gaseous mixtures commonly found in mines.

It has been suggested that, in some cases, possibly, a rather slack wick or a defective stopper in the lamp may be responsible for an excessive evaporation of the gasoline contained in the lamp. It is my experience, however, that even when using a lamp that is in perfect condition, the cap to which I have referred is plainly in evidence; and, I believe there is no doubt that this cap has, in many instances, been mistaken for a cap produced by the presence of gas in the mine air.

I would suggest that a comparative analysis of gasoline vapor and marsh gas or methane (CH_4), together with gaseous mixtures containing other hydrocarbon gases, such as olefiant gas (C_2H_4), which is frequently found in mines, associated with marsh gas, would be both interesting and instructive to COAL AGE readers. It would be interesting to know the specific gravities, temperatures of ignition, color and appearance of the flame caps, together with the composition of such mixtures as are commonly found in coal mines.

W. H. MOORE.

Nanaimo, B. C., Can.

Attention has been frequently drawn, in COAL AGE, to the fact that any lamp burning a highly volatile oil is not a good lamp for testing for gas, owing to the ready volatilization of the oil, which is greater as the lamp heats in gas. The following quotation, referring to the use of a bonneted lamp burning volatile oil, for testing for gas, is taken from COAL AGE, Vol. 1, p. 619:

> The lamp is not a good testing lamp, for several reasons, namely, the lamp is bonneted, which fact together with the vaporous oil burned modifies, at times, the atmosphere in the combustion chamber, so that it does not truly represent the gaseous condition of the outside air. The lamp heats readily in gas, the oil volatilizes more quickly, and the lamp gives higher indications than it should, after being exposed to gas a short time. The lamp flame is easily extinguished and when relighted, after a short period of extinction, the lamp may flash or pass flame.

The evaporation of the volatile oil from the wick of the lamp cannot be prevented and varies with the temperature of the lamp. As is well known, a testing lamp exposed to gas for a short time frequently becomes so heated that it cannot be held in the hands with comfort. Under these conditions, a lamp burning volatile oil will give a higher indication than a lamp burning an ordinary non-volatile oil. As stated by correspondent, such a lamp frequently exhibits a clearly discernible cap when burning in pure air, owing to the oil vaporized in the combustion chamber.

Another quotation from COAL AGE, Vol. 3, p. 816, giving the essential features of a good safety lamp for testing for gas in mines reads as follows:

> A pure sperm or cottonseed oil is better adapted for testing than a volatile oil, because the latter volatilizes more rapidly as the lamp heats in gas, and gives unreliable results in testing.

In regard to a comparative analysis of gasoline vapor, methane and other hydrocarbon gases and gaseous mixtures, it may be stated that these mixtures commonly found in mines consist chiefly of methane and variable quantities of olefiant gas (ethene, C_2H_4), carbon dioxide (CO_2) and possibly slight quantities of carbon monoxide (CO), due to the presence of fine dust floating in the air and which is converted into this gas, in contact with the flame.

The flame cap produced by methane, in the absence of other gases, is a pale blue cap that is difficult to discern when a small percentage of the gas is present; but which becomes plainly visible when the proportion of gas reaches 2.5 per cent.

The presence of even a small percentage of olefiant gas, associated with the methane, increases the luminosity of the cap and renders it more readily discernible. Larger percentages of olefiant gas, when present, render the flame somewhat unsteady, due to the presence of the gas increasing the explosive condition of the mine air. When fine dust is present in the air its conversion into carbon monoxide (CO) lengthens both the flame and its cap, owing to the increase of the heat of the combustion and the temperature of the flame. Because of these variable conditions, due to the varying composition of the gaseous mixtures in mines, the comparative analyses of gasoline vapor and the gaseous mixtures found in mines would have only a suggestive value, by indicating the relative effect that these gases have on the lamp flame, which effect we have just explained in general terms.

The average specific gravity of gasoline, which is a product of the distillation of petroleum, may be taken as 0.70 (COAL AGE, Aug. 29, p. 356). The vapor of gasoline flashes or takes fire, in contact with flame, when the gasoline has a temperature that is considerably below zero (Fahr.). The average composition of gasoline may be assumed as: carbon, 85 per cent., by weight, and hydrogen, 15 per cent., with less than 1 per cent. of water vapor. The calorific power or heat value of gasoline is practically 20,000 B.t.u. per lb., as compared with 23,500 B.t.u. for methane, assuming complete combustion.

Examination Questions

Alberta, Canada, Examination for First-Class Certificates, Held June 23-25, 1914

(*Selected Questions, Continued from Last Week*)

Ques.—It becomes necessary to wall off a gob fire; and, to do so effectively, several working places have to be included in the area affected by the stoppings. By what means would you ascertain when the stoppings could be removed? What dangers would you guard against in removing them?

Ans.—Assuming that the stoppings have been well built and sealed, careful tests should be made, from time to time, to ascertain the condition of the air within the inclosure. To provide for doing this, pipes should be built into the stoppings near the intake and return ends, respectively. Such pipes, for testing the air, are placed near the roof. It is customary also to leave another pipe at the bottom, to drain the area. These pipes are supplied with stop-cocks. To test the air behind the stopping, the stop-cock in the pipe close to the roof is opened and the air flowing therefrom tested with a safety lamp. Evidence that fire still exists within the inclosed area may be found by cautiously sniffing the air coming from the pipe. The temperature of the air should also be taken, as evidence of the progress made in the extinction of the fire.

Great precaution is required in the removal of stoppings, under these conditions. First, a small hole should be made in the stopping at the return end of the section; and time should be given for the air pressure to adjust itself within the inclosure. Only safety lamps should be used when performing this work. The hole in the stopping may then be enlarged sufficiently to permit of a good circulation of air through the opening. A small hole should now be made in the stopping at the intake end, and time should be given for the air entering this opening to create a circulation through the inclosure. The results should be carefully watched at the return end, by making frequent tests at this point with a safety lamp. Upon observing any indication of increase of temperature or other evidence of fire within the area, the intake stopping should be promptly closed, and the stopping at the return end rebuilt and more time allowed for the extinction of the fire.

Ques.—During rescue work underground, after an explosion, a rescue party wearing breathing apparatus and on returning along a roadway that was previously clear of gas, finds that it contains a considerable percentage of carbon monoxide (CO). How do you account for this and what instructions will you give to guard against disaster from this source?

Ans.—Assuming that the previous observations showing the entry to be clear of gas were carefully made, the presence of carbon monoxide observed in this entry, on the return of the rescue party, can only be accounted for on the ground that this gas was accumulated in one of the rooms, or has been generated since by a gob fire in some adjoining workings and had escaped the notice of the rescuers on their trip inby.

To guard against such danger, it will be necessary to make a more thorough investigation when passing into the mine. When going in, the rescue party should not close any door after passing through the same, unless the section of the mine in which the ventilation is controlled by such door has already been explored and found to be safe and free from gas. By closing such a door affecting the ventilation of an unexplored section, the rescue party endanger their own lives, since the gas from that section will then be forced out upon them.

Ques.—Of what value are regular readings and records of the barometer and thermometer? Under what conditions are readings of the hygrometer of value? If a barometer, at a mine, registers an average of 27 in., what would be the approximate elevation above sea level and the atmospheric pressure, in pounds per square inch?

Ans.—Regular barometer readings, in connection with mining operations, are important in respect to their indicating the expansive effect produced on the mine air, which expansion always accompanies a sudden fall of the barometer or decrease of atmospheric pressure. As a result of this, the air and gases confined in large abandoned areas are forced out into the live workings, causing the explosive condition of the mine air to be considerably increased for a time.

Regular readings of the thermometer taken inside and outside of the mine are important as showing a greater or less capacity of the air for carrying moisture or absorbing moisture from the mine. Hygrometer readings are of greatest value in a dry and dusty mine. They show the relative humidity of the mine air and thus indicate its capacity for absorbing moisture from the mine and rendering it dry and dusty. A surface reading of 27 in. of mercury corresponds, under normal atmospheric conditions, to an elevation of 2800 ft. above sea level. The corresponding atmospheric pressure is $27 \times 0.491 = 13.257$ lb. per sq.in.

Ques.—The underground workings of a mine are divided into three districts, each district being ventilated by a separate split of air. If the resistance to the passage of air in each split is unequal, describe fully by what means you would provide an equal quantity of air for each district.

Ans.—Assuming that the resisting powers of the several splits are unequal, to obtain an equal distribution of air between them, it will be necessary to introduce regulators to control the circulation in two of these splits. By adjusting the openings or areas of passage through these regulators, it is possible to produce an equal distribution of the air in the several splits. For this purpose, either the box regulator or the door regulator can be used. The former is generally located on the back entry near its mouth; while the latter is always located at the intake end of the split. The regulator, in either case, should be so arranged as not to interfere with the haulage of the coal.

Coal and Coke News

Harrisburg, Penn.

Although he did not refer directly to either the agitation for better surface protection in the anthracite coal region or the litigation now before the courts relative to a tax on anthracite coal, provided by the Roney bill, Governor Martin G. Brumbaugh, in the course of his inaugural address delivered on Jan. 19, intimated strongly that he favors both for the people of the anthracite region of the state. His language cannot be misconstrued, especially when he said:

Once Pennsylvania was rich in natural resources and unequaled in beauty. Much of its wealth has been taken from it. Much yet remains. It has passed to private and corporate agencies. They have rights that must be respected. So also have the people of the state a claim upon these great natural assets. In their marketing the commonwealth plays an important part. In the returns the people ought to have a share. A reasonable tax upon our great natural resources as they flow to our markets is both fair and wise.

On the matter of surface safety, the governor's message says that, after all the people are the great asset of the commonwealth. "That they may be safeguarded in their health, their education, their homes, their worship, their property, their regulated freedom, their toil, should be our constant endeavor."

The appointment of Francis Shunk Brown as attorney general is important to the coal industry in connection with the fight on the Roney anthracite tax act, as he is one of the men who drafted that measure.

Judging from the personnel of the Senate and House mines and mining committees the outlook for legislation in the interest of the anthracite workingman is not particularly bright. No members from the anthracite region hold places on this committee. The House chairman is Mr. Hess, of Lancaster County, and the Senate chairman is Mr. Thompson, from the bituminous region.

In the 1913 session every bill affecting anthracite miners that was introduced in the House saw the light of day and was either defeated on the floor of that branch or killed by the Senate committee. To prevent a repetition of this is evidently the intention of the House leaders, and the committee will not, under any circumstances, promiscuously release all bills referred to it.

The Question of Taxes

State taxes on real estate, on bituminous coal, gas, oil and gasoline are being considered by some of the legislators as a means of making up the deficiency in the state revenues for the next two years. The adjudication of the anthracite tax will take months, and practically $5,000,000 to $6,000,000 in state funds are already tied up. It was contended in the Dauphin County Court that the anthracite tax was unconstitutional as class legislation, and it is likely that the present legislature will pass a bill placing a tax on bituminous coal.

This action would be in keeping with the recommendations of the Tax Commission two years ago. Francis Shunk Brown, now attorney general, was counsel for the commission which recommended a state tax on anthracite, and suggested also taxing bituminous coal, natural gas and oil. It recommended a commission to consist of Pennsylvania, Ohio and West Virginia men, and a resolution carrying out this suggestion was passed by the Pennsylvania Legislature of 1913, but the other states never took action.

The present legislature cannot appropriate within $17,000,000 of what the 1913 session did unless the State Treasury balance is to be endangered, but it is known that Governor Brumbaugh wants to carry out many governmental projects that will run the appropriations high, and also he is desirous of carrying out a comprehensive road building program. The appropriations two years ago exceeded $66,000,000.

The failure of the people to pass the $50,000,000 road bond issue in 1913 left the state with its 10,200 miles of highways on hand and only the ordinary revenues with which to build roads. Governor Brumbaugh, in his inaugural message, said it might as well be admitted that it was a mistake to take over so many miles of roads before it was certain the bond issue would be provided.

A return to a state tax on real estate would be met with considerable opposition. The Governor's views on the subject are not known as yet. But it is conceded that the state cannot lay a heavier burden upon the corporations, which now furnish most of the state's revenues. Members of the legislature here this week were of the opinion that a land tax, if levied, would provide sufficient funds for the carrying out of a comprehensive road building scheme. A state tax of ¼ or ½ of a mill on the assessed valuation of all real estate assessed for taxable purposes would bring into the treasury sufficient funds, it has been suggested. In 1913 the assessed valuation of the state's realty was $5,867,775,686 and a ¼ mill tax would raise $1,467,000.

The matter is receiving considerable thought from the members of the senate, especially, and it will be placed squarely before the Governor soon.

PENNSYLVANIA

Anthracite

Shenandoah—While five men were repairing a throttle on a high pressure steam line at the Cambridge Coal Co.'s breaker engine house on Jan. 21, a heavy steam pipe carrying 150 lb. pressure burst, catching the men in the volume of steam and scalding water, hurling them in all directions, blowing the sides out of the engine house and wrecking part of the breaker and probably fatally injuring three men.

West Pittston—Schooley shaft, that part of the Pennsylvania Coal Co. on the west side of the Susquehanna River, is rapidly being placed in shape to mine the entire output. A new washer has just been completed and this will be used to prepare the coal in the adjoining bank that it may be used for fuel for the boilers which are used there.

Shamokin—Ten inches of snow fell here on Jan. 23, blocking railroads and collieries. A number of the latter were abandoned for the day. Several hours after the snow a heavy rain started, continuing most of the day. By night there was more snow. Water flowed into a number of the mines in such quantities that a score of operations are badly flooded, and it is feared some will be idle for a lengthy period.

Wilkes-Barre—At a meeting of the Wilkes-Barre District Mining Institute, held on Jan. 21, the date for the big mining institute dinner, which will be held May 5, at Irem Temple, was announced and a committee on program for that event was named as follows: Charles Enzian, J. J. McCarthy and R. P. Thomas. The directors all agreed to visit the mining school at the Y. M. C. A. and talk to the students when they find it convenient.

Bituminous

Uniontown—Announcements were made recently by the W. J. Rainey Coke Co. of a reduction of 7 per cent. in the wages of employees. The firm thus returns to the scale of 1910. The cut affects 5000 employees at 11 plants.

Connellsville—The production of coke in the Connellsville region is now slightly over 200,000 tons per week, with shipments slightly less than the production. A considerable quantity of stock coke was recently moved out of the region, however.

The sixth annual banquet of the Keystone Mining Institute will be held Saturday evening, Feb. 6, with prominent mining men from all parts of the state attending.

On Jan. 25, 15,000 employees at the 68 plants of the H. C. Frick Coke Co. were placed at work on full time. For many months these plants have been operating four days or less per week. Officials of the company refuse to state whether the full time will continue or otherwise. The output of the company will be increased approximately 25 per cent. It is believed, however, that the officials of this firm anticipate a general revival in the coke trade within the next few weeks.

Pittsburgh—The date for the sale of the property of the Pittsburgh-Buffalo Co. has been fixed for May 27. The holdings of this firm consist of five separate mines, which will be sold separately. Foreclosure proceedings were entered against the Pittsburgh-Buffalo Co. by the Union Trust Co. some time ago, the latter firm holding mortgages on the coal property, which with accrued interest amounted to nearly $4,000,000. Stockholders of the coal company objected to the immediate sale of the holdings, claiming that this would be prejudicial to the interest of the unsecured creditors, and the court was asked to withhold the sale until a later date, as it would then be possible to secure a better price for the property

Ralphton—The output of the seven mines of the Quemahoning Coal Co. for the year 1914, in spite of the slump in the trade and other handicaps was 630,000 tons, according to the report just completed by State Mine Inspector F. W. Cunningham. Five of the company's mines are at Ralphton, one at Rockwood and one at Husband. Coal orders received thus far this year indicate that the business of the company in 1915 will be fully up to the standard.

WEST VIRGINIA

Charleston—A deal which concerns a large part of the output of the New River Coal Co. has been reported whereby the New England Coal & Coke Co. secures an important tonnage from the mines located in the New River district. This signifies that the coal company will sell a large portion of its coal, or all of that shipped to the New England states to the New England Coal & Coke Co. for a period of years. This coal has heretofore been sold under contract to the Darrow-Cann Co. of Boston. It is said that the output involved exceeds 2,000,000 tons per year.

Huntington—Earle A. Henry, chief of the State Department of Mines, has given out the information that while the business depression made large reductions in the coal production of other states, it merely retarded the growth of the industry in West Virginia. The output for the calendar year amounted to 72,800,000 short tons, while the coke produced was 1,600,000 tons, approximately 1,344,000 short tons of coal were used in the mine operations, 896,000 tons were furnished to the local trade and tenants, and 3,136,000 tons were used in coke ovens, and approximately 67,200,000 tons were shipped from the mines, at least $\frac{9}{10}$ of which went to points outside of the state. Exclusive of foremen, office employees, store clerks, etc., 78,000 men were employed in and around the mines of the state, and 5500 mules, together with 1000 horses and 1700 locomotives, were employed for haulage. During the year about 20 new mine fans were installed, 30 new tipples were constructed, 600 new mine cars were purchased, and 400 new dwellings built. Reports indicate that there were at least 100 mines closed by reason of the depression in business, while about 75 more were in early stages of development. These figures are not final, but are based on information available at the present time.

ALABAMA

Birmingham—The remaining physical property of the bankrupt Oak Leaf Coal Co. was sold a short time ago for $4643.38, and the sale approved by E. H. Dryer, referee in bankruptcy. W. G. Lunsford and J. S. Shannon, the purchasers, announce that they will organize a new company and begin operations within 30 days. It is understood that they have also obtained the land and mineral rights.

Seeking to recover the amount of commissary license alleged to have been wrongfully collected in 1911, William Bibby, a well known coal operator of Littleton, Ala., has called a meeting of all commissary owners and managers throughout the state to join in a movement to have the money refunded through the present legislature. The commissary license act was passed four years ago. Some of the larger corporations owning commissaries paid the license under protest, and as the act was later declared unconstitutional, the money was refunded. Mr. Bibby states that a great number paid the license without protest and as the money had passed out of the hands of the probate judge and had been distributed to the county and state, nothing but an act of the legislature will enable them to recover the amount of license paid, amounting approximately to $10,000.

KENTUCKY

Greenville—Muhlenberg County operators and miners for the time being are enjoying a season of good cheer, as every mine in the county is working, with almost full time prevailing. The output is being moved out as fast as it is produced. There is little definite information as to how long the activity will continue but the people of the county are making hay while the sun shines.

OHIO

Salem—J. H. Steffel, who purchased the Ely Bros. mine last October, has filed an assignment for the benefit of his creditors and appraisers have been named to value the coal property.

Columbus—J. M. Roan, Ohio chief deputy and safety commissioner of mines, in his second bulletin for the year shows the serious injury of a miner through the careless use of calcium carbide for lamps and as a result makes an order calling upon all mine bosses and superintendents to enforce the law governing the use of this illuminant. The law provides that only sufficient calcium carbide shall be taken into a mine to supply the lamp for one day and this supply shall be kept in an airtight container.

INDIANA

Indianapolis—The Indiana Public Service Commission has approved a rate of 50c. a ton for coal shipments over the Chicago & Eastern Illinois R.R., from Brazil to Indianapolis. The road is not required to readjust its rates from intermediate points. The order opens up additional fields for the Indianapolis coal supply and puts the C. & E. I. on an equal basis with the Big Four and Vandalia in hauling coal to Indianapolis.

Cannelton—The American Cannel Coal Co. has closed a contract with the municipal electric light and power plant to furnish current for operating its mines, about two miles from the city. Under the terms of the contract the expense of installing the poles and wires will be divided while the company has bound itself to use current to a minimum amount of $500 a year.

ILLINOIS

Hillsboro—Sheriff Wheeler, of Sangamon County has advertised for sale the properties of the Illinois Colliery Co., to satisfy a judgment in favor of the Pittsburgh Coal Co. This sale will be held in Springfield, Feb. 4. The property to be sold includes the Litchfield coal mine with 10 acres of surface and 225 acres of coal rights, also 11,300 acres of coal rights around Waggoner lying in Montgomery and Macoupin Counties.

Virden—Fire on Jan. 21 destroyed the engine, boiler, and dynamo rooms of the Montour Coal Co., entailing a loss of about $25,000. Two hundred and fifty miners are affected by enforced idleness.

Murphysboro—The Harrison mine of the Big Muddy Coal & Iron Co. is being dismantled after 40 years of service. This is the oldest producing mine in all southern Illinois, and at the time of its abandonment was getting out from 800 to 1000 tons per day. On account of working into the out-crop and the exhaustion of most of its acreage, the cost of production became so high that it was decided to abandon the mine. The remaining acreage will be worked from the No. 9 mine on the east side of the Big Muddy River, and tunneling is now in progress under the river bed to reach this coal, which lies at a depth of 165 ft. below the surface. Judging from the remaining acreage in the Big Muddy field, it is likely that in the next 10 or 15 years this body of coal will be entirely worked out and the field abandoned.

MINNESOTA

Warroad—Analysis of samples of coal secured while digging a well here and sent to the State University for analysis show the material to be a high grade lignite, said to be superior to that found in North Dakota. The coal measure was about 14 ft. in thickness. Although it is believed that another measure underlies the first, the present deposits are considered to be sufficient to be a paying proposition, and many people are watching the work of the well drillers.

OKLAHOMA

Alderson—The Rock Island Coal Mining Co., 139 West Van Buren St., Chicago, has sunk a new shaft at this point in the center of the Alderson coal basin and reached the well known McAlester vein of 4½-ft. thickness at a depth of approximately 804 ft. This is expected to be one of the most modern, up-to-date plants in the Southwestern coal fields, and will be equipped with steel tipple, washery, picking tables, box car loaders, and the latest equipment. A daily output of 1000 tons is planned.

Hartshorne—The Rock Island Coal Mining Co. has sunk a new shaft near here which will be known as Mine No. 10, to penetrate the Lower Hartshorne vein. This reached the coal of 4 ft. 2 in. thickness at a depth of 595 ft. A wooden tipple is temporarily being used until the underground workings are fully developed, when a steel structure will be erected. It is expected that the company will award contracts for the steel tipple and other machinery and equipment required at this new mine some time early in the spring of 1916, the permanent plant to be operated by electricity.

PERSONALS

D. H. McGee has taken charge of the Buffalo office of W. A. Stone & Co., coming from the home office at Uniontown, Penn.

The Retail Coal Dealers of Birmingham, Ala., recently met and elected the following officers for 1915: Asa L. Hoyt, president; J. E. Hawkins, vice-president; M. G. Guggenheim, secretary-treasurer.

A. D. Macfarlane, chief engineer and assistant manager for the receiver of the LaFollette Coal, Iron & Ry. Co., is on a visit for a week at Kingston, Penn., the home of his father, who is quite ill.

N. Bowland, formerly advertising manager of the Buffalo Forge Co., and more recently of the Duff Mfg. Co., has just accepted a position as advertising manager of the A. W. Byers Co., of Pittsburgh, Penn.

Edward H. Coxe, of LaFollette, Tenn., former manager of operations for the receiver of the LaFollette Coal, Iron & Ry. Co., will move to Knoxville, Tenn., Feb. 1. His address there will be "The Marion."

J. M. Page, until recently superintendent for the LaFollette Coal, Iron & Ry. Co., LaFollette, Tenn., first at Rex No. 2 mine and then at Rex No. 1 mine, is now superintendent of the Sunny Side Coal Co. in Colorado.

David Kelso and Thomas Roscoe, of Birmingham, Ala., were reappointed associate state mine inspectors for fill-in terms, by Governor O'Neal, recently. The short term will expire Apr. 27, and they must either be appointed again at that time or their successors be selected by Governor Henderson, who was inaugurated on Jan. 18.

Warner Shook, of Birmingham, Ala., has been placed in charge of the reorganization of the New Orleans Transportation Co. Failure to complete work on Lock 17 has delayed the original plans of the company, but as this work will soon be completed, the company is planning to build a fleet of barges, sufficient to handle a large tonnage of coal from the Alabama coal fields to New Orleans.

OBITUARY

Thomas Jacobs, who mined coal until after he was 77 years old, died at his home recently in Glen Carbon, Ill. His death was the occasion of the mines in that vicinity closing down for the mining fraternity to attend the funeral. This is something that isn't customary in that section, but on account of the record of over 50 years as a coal miner it was a mark of tribute.

CONSTRUCTION NEWS

Craftsville, Ky.—The Roberta Coal Co. expects to begin work looking toward a big development of the Wright coal land tract near here on the Lexington & Eastern R.R. Several hundred men will be employed from the start.

Pittsburgh, Penn.—Plans have been submitted by the Pittsburgh Coal Co., to contractors for estimates on a hoisting engine house and substation at Montour mine No. 4, located at Hill Station about six miles above Marshalsea.

Sciotoville, Ohio—The Dravo Contracting Co. is making rapid progress on the bridge spanning the Ohio River at this point, and a larger number of men will be employed within a short time. At present about 100 men are upon the work every day, including Sunday.

Henry, W. Va.—The work of reopening the mine of the Davis Coal & Coke Co., at Henry, is now well in hand, the water being well pumped out of the shaft. There will also be built at this place during the spring, 26 houses to be occupied by miners and other employees.

Huntington, W. Va.—Unless some unforeseen contingency arises, the new operations of the Maher-Purseglove Co. will start shortly. The tract of land to be developed is located 10 miles from Logan on Island Creek. Work preliminary to the starting of the operation is being rushed.

Whitesburg, Ky.—G. W. Hopkins and others, of Glamorgan, Va., are leasing the E. M. Webb coal land tract at Sergent, on the Lexington & Eastern R.R., and will put in a coal mining plant, beginning within 30 days. They expect a daily capacity of 800 tons from the beginning.

Prestonsburg, Ky.—The Alum Creek Block Coal Co., recently organized at Ashland, has leased a 1000-acre coal land tract at Alum Creek, near here, and will begin development at once. The company will employ several hundred men for the initial work. This development will be on the Big Sandy branch of the Chesapeake & Ohio R.R.

Jellico, Tenn.—The work of surveying for the Jellico, Cappachine & Western Ry., has been begun in the Jellico mountains. This road is to be about 30 miles in length, and will be constructed for the purpose of opening the coal and timber fields lying in the mountain country west of this city. It is believed that grading will be started within a short time.

Penny, Ky.—The Penny Coal Co., beginning Feb. 1, will put 200 men to work building miners' houses and opening additional mines. It began the shipping of coal a few days ago. L. B. Abbott, formerly with the Consolidation Coal Co., is manager of the new operations. The development is on the Sandy Valley & Elkhorn branch of the Baltimore & Ohio.

Steubenville, Ohio—It is reported that the West Virginia-Pittsburgh Coal Co. will open a new mine on the Wabash R.R., in the Cross Creek district of Brooke County, W. Va. It is said that two large turbine engines will be installed at the new operation. Further that this firm intends to establish a boat yard in Wellsburg, and will manufacture and repair river barges.

Colliers, W. Va.—The new houses started some time ago at the Locust Grove mine of the West Virginia-Pittsburgh Coal Co. a short distance above Colliers, were completed recently, and were occupied at once by employees. All available houses at this operation are now occupied with the exception of one which was only recently vacated. The new car shops being constructed at this mine will be completed within a short time.

Mater, Ky.—The South East Coal Co., a subsidiary of the Slemp Consolidated Coal Co., is starting the preliminary work on a coal mining plant about midway between Mater and Fleming on the Lexington & Eastern branch of the Louisville & Nashville R.R. in the Boone's Fork coal field. The company proposes a good sized development, and will start work at once building miners' houses, coal tipples, doing grade work, etc.

Garrett, Ky.—The Ambursen company has about completed the installation of a Lawson automatic tramway for the Elk Horn Mining Corporation at one of its mines. The tramway takes the slate from the tipple in the bottom of the valley, carries it a distance of about 1000 ft. up the mountain back of the tipple to an elevation of 320 ft. and automatically dumps it into the valley beyond where there is abundant room. The capacity of the tramway is 20 tons per hour.

NEW INCORPORATIONS

Youngstown, Ohio—The Western Reserve Mining Co. has filed amended articles of incorporation reducing its capital stock from $100,000 to $15,000.

Coalmount, Ky.—The Watts Creek Coal Co. has been organized with a capital stock of $10,000. The incorporators are W. L. Moore, M. M. Stanaford, F. S. Lawson and E. L. Stephens.

Chicago, Ill.—The Black Star Coal Co. has been organized with a capital of $100,000 to operate coal mines, gas and oil wells. The incorporators are Frank E. Doherty, John T. O'Connor, and Albert G. Miller.

Columbus, Ohio—Papers have been filed with the secretary of state changing the name of the Whyel Coal Co. of Columbus to the Sunfish Creek Coal Co. This firm holds a large acreage in Morgan County which will be developed.

Lexington, Ky.—Amended articles of incorporation increasing the amount of indebtedness that may be incurred by the Lexington & Eastern Ry. from $10,000,000 to $20,000,000 have been filed in the county clerk's office here. W. A. McDowell, Younger Alexander, Charles N. Manning and Samuel M. Wilson, directors of the company, signed the paper.

Martins Ferry, Ohio—An application has been sent to the Secretary of State for a charter for a new coal corporation to be called the Maher-Purseglove Co. The stockholders of this corporation are the same as those composing the Purseglove-Maher Coal Co. The new firm will operate the mines which will be opened in the Logan field of West Virginia.

McKeesport, Penn.—A charter has been granted to the Allegheny Byproduct Co., with a capitalization of $350,000; extensive repairs and improvements are now being made to the plant at Otto and within 60 days it is said that work will be started to its fullest capacity. About 225 men will be given employment, approximately one third of whom will be skilled workmen.

Blairsville, Penn.—A charter of incorporation has been granted to the Bradenville Coal & Coke Co., presaging an important change in local mining circles, involving the transfer of the Duquesne plant of the Bessemer Coal & Coke Co. to the Graff interests of Blairsville. It is said that the sale of this plant has been pending for several weeks and its consummation in the near future is believed to be assured provided the survey of the coal proves satisfactory to the purchasers.

INDUSTRIAL NEWS

Hazard, Ky.—Williams & Wilson are reported to have leased 1000 acres of coal land for development.

Birmingham, Ala.—The Edgewater mine of the Tennessee Coal & Iron Co. produced last year the largest tonnage of any mine in the state—716,000 tons. This was in excess of any other two mines in the commonwealth.

LaFollette, Tenn.—The bankruptcy case of the Electric Corporation, of Boston, Mass., against the LaFollette Coal, Iron & Ry. Co., which was to have been tried in the Federal Court at Knoxville, Tenn., on Jan. 19, has been again postponed.

Toledo, Ohio—The Lee J. Sandridge Coal Co. will establish a general office in Toledo. This will be in charge of S. M. Stanley, formerly of Chicago, who has been appointed general western agent of the company. This firm mines and markets Meriden smokeless coal.

Washington, D. C.—Proposed increased joint rates over the Mobile & Ohio R.R., on coal from mines in Alabama, Illinois, Kentucky and Tennessee, to Memphis and other points which were to become effective Feb. 1, were suspended Jan. 22 until Apr. 30 by the Interstate Commerce Commission, pending investigation.

Chattanooga, Tenn.—Heirs of William Clift have instituted suit in the Chancery Court of Hamilton County against the New Soddy Coal Co. seeking to recover between $150,000 and $200,000 in royalties. A hearing of the case before A. W. Gaines, special commissioner, recently began. The suit is based on a lease of 11,000 acres of land by the coal company under date of 1901.

Alliance, Ohio—J. H. Steffel, of Salem, who purchased the Ely Bros. coal mine, west of Alliance, last October, has made an assignment to J. P. Davis for the benefit of his creditors. G. Thomas, J. Ashman and J. T. Reese, have been appointed as appraisers. After they have completed their work the mines will be sold to settle up affairs. Mr. Steffel claims assets double the amount of liabilities.

Toledo, Ohio—The convention of the Michigan, Ohio, Indiana Coal Association will be held at Cedar Point in June. The exact date of the convention will be announced by President H. H. Beam. Last summer the convention was held at Indianapolis. Officers reported the association in excellent condition and that the number of claims and collections handled by it had doubled during the last year.

Milwaukee, Wis.—The Manierre loader, designed to load lump and sized coal into boxcars, has been adapted to load soda ash by the Solvay Process & Michigan Alkali Co. Soda ash is about the consistency of table salt, and is very dusty. The company, which had tried many loaders of its own unsuccessfully, was skeptical about the Manierre. The Manierre Engineering & Machinery Co. guaranteed the first loader it installed. It was successful and now three are at work.

San Francisco, Calif.—In its fight for a new trial before the Federal circuit court of appeals the Western Fuel Co. has filed a bill of exceptions. The officers convicted and sentenced in the original trial were James B. Smith, vice-president; Edward Mayer, a weigher; and Fred C. Mills, superintendent. Smith and Mayer were sentenced to San Quentin for 18 months while Mills received a county jail sentence of one year. None of the convicted officers have yet begun to serve their sentences.

Greenville, Ky.—Returning five new indictments growing out of investigations into the "possum hunter" depredations of the last few months the Muhlenberg County grand jury has adjourned, having brought in a total of 36 indictments. Owing to conditions of roads and weather the several investigations were allowed to go over to the next term of court. The case involving alleged intimidation of employees of the Bevier Coal Co. will probably be heard on a change of venue from Muhlenberg County.

Pittsburgh, Penn.—The demand for coke among founders is growing, this change being particularly noticeable during the recent past. For more than two years founders have been using less coke than for many seasons previously. It is stated, however, that orders have been coming in more freely of late. Some good contracts have been closed, and in nearly all cases the buyers have insisted on a contract specification that will enable them to call for larger quantities at the same price for the contract period.

Pittsburgh, Penn.—In the United States District Court on Jan. 21, W. W. Keefer, of Pittsburgh, and F. M. Wallace, of Erie, Penn., were appointed joint receivers with D. W. Kuhn, for the Pittsburgh-Westmoreland Coal Co. Keefer and Wallace take the place of the Fidelity Title and Trust Co., whose resignation as receiver was accepted by Judge Orr. The Fidelity company also filed its report, which showed that the coal company was earning money and that it has paid off several bonds with money from the sinking fund.

Uniontown, Penn.—The appointment of receivers for J. V. Thompson was not entirely unexpected even some time ago, and was obviously a necessity when the bank of which he was president was closed. The proceedings thus far are friendly, and hopes are entertained that the complicated task of arranging matters will remain in friendly hands under the supervision of Mr. Thompson himself. The opinion in disinterested quarters is that heavy losses would follow a legal contest between the different parties in interest.

Sandusky, Ohio—Official figures on the coal shipments handled at the Pennsylvania R.R.'s docks here, just made public, indicate that the tonnage handled last year was not materially below that of 1913, in spite of the general falling off in Lake shipments. The business at these docks for 1914 was only 85,000 tons less than that of 1913, the total being 2,533,250 tons for 1914, as compared with 2,618,250 for the former year. This business represents 53,982 carloads of coal, while 543 vessels took cargoes from the docks for Lake ports.

Wilmington, Del.—Alleging that the Elliott-Chapman Coal & Coke Co., of Gaston, Ala., a Delaware corporation now in bankruptcy failed to comply with certain requirements of the Alabama law imposed upon foreign corporations, a meeting of creditors opposed the allowance of claims of certain Alabama creditors holding that the alleged failure of the company to do certain things required by the Alabama law invalidated these claims, which were for supplies, material, etc. The point will be argued before Referee Wales on Feb. 3.

Charleston, W. Va.—The statement of shipments of coal and coke over the lines of the Chesapeake & Ohio Ry. during the month of November and 11 months of the year 1914, shows that 1,568,002 tons of coal and coke were shipped over the line during the month of November, as compared with the shipment of 1,558,521 tons for the same month of 1913, or an increase of 9481 tons. For the 11 months of the year, 19,465,505 tons were shipped, as against 16,018,039 tons for the corresponding period of the previous year. This revealed an increase of 3,447,466 tons over the 11 months of the previous year.

Whitesburgh, Ky.—There is much speculation in railroad circles here regarding the prospective race between the Louisville & Nashville and the Baltimore & Ohio for territory in the Rockhouse Creek section in Letcher County. It is known that the B. & O. a few days ago secured $5,000,000 by mortgage with which to make the extension, and about the same time the L. & E. branch of the L. & N. made arrangements to increase its indebtedness to $20,000,000 instead of $10,000,000. Both railroads have engineers in the field locating lines, and those in a position to know say there will be "something doing" in the coal fields ere the ides of March. It is believed that both roads will build through Rockhouse Creek.

Pittsburgh, Penn.—That officers of the Bank of Pittsburgh had attempted to force foreclosure proceedings and the sale of the $14,000,000 properties of the Four States Coal & Coke Co. a subsidiary of the Pittsburgh-Buffalo Co., was the charge made at a meeting of the stockholders of that firm held on Jan. 23. It was alleged that bank officials had flatly refused to agree to any reorganization plan that would not contemplate wiping out all the common stock interest and also that of preferred stockholders, the owners of which had refused to contribute to the expenses of reorganization. The stock of the coal company is largely held in small allotments by men employed by the Pittsburgh-Buffalo Co. and its various subsidiaries.

Cleveland, Ohio—Business depression and the miners' strike were the grounds on which a receivership was granted for the Card & Prosser Coal Co. recently by Judge Pearson. The application was made by the Union National Bank, which holds a judgment of $10,900 against the coal company. C. T. Brooks was named as receiver. The company was capitalized at $150,000 and the petition in bankruptcy asked that the receiver be given authority to carry on the business of the firm. It is stated that owing to the present coal strike, it is impossible to operate the mines owned by the company in and about Lisbon, Ohio. The depression in the furnace business at present has also operated against the company. It is impossible for the firm to make a profit until conditions improve.

Coal Trade Reviews

General Review

Large accumulations of anthracite and prices are weakening. Bituminous output rigidly curtailed but still in excess of market requirements. The expected improvement in the industrial consumption has failed to materialize.

Large surpluses of anthracite are noted in all directions, and unless there is some unusually severe weather there is little prospect of the trade righting itself before the close of the season. The market is distinctly flat with operations heavily curtailed, and the independents slashing the company circulars. Accumulations are large, particularly in the hands of the dealers, and it will take more than a slight cold snap to develop any important buying movement.

The spot bituminous market is absolutely flat. Accumulations are large at all the distributing centers while mining operations have been cut down to about 60% of the running schedules in effect a year ago; but, in spite of this heavy curtailment, shippers are exceedingly hard pressed to find a disposal for their product. A spectacular advance in ocean freights to New England points threatens to develop complications as regards the Hampton Roads coals in the Down East markets, and Pennsylvania operators are watching closely for an opportunity to broaden their activities in that direction. At the moment the movement is confined entirely to contracts, and the outlook for the future hinges largely on weather conditions.

A slight broadening of the market is noted in the Pittsburgh district due partially to the stormy weather and to a very light increase in operations at the steel mills and on the railroads. There is scarcely any renewing of old contracts. If the situation does not take a turn for the better shortly, operators are beginning to fear that negotiations on new contracts will open at a low level. Sacrifice prices are becoming more frequent in Ohio, and the effects of the long continued pressure under which the market has been laboring are becoming acutely evident. The domestic trade stiffened up somewhat as a result of the heavy snow storms and lower temperatures, but prices continue unchanged and the outlook for the steam grades is as uniformly discouraging as ever, with consumers showing a distinct tendency to hold off in closing.

The steam coals are somewhat steadier in the Southern market, but the domestic grades continue heavy, and a great deal is accumulating on track awaiting disposal. Mine operations are at about half capacity. Middle Western dealers are apparently loaded up to full capacity, and in spite of the extremely cold weather and heavy snows, the trade is remarkably apathetic with prices showing a distinctly weakening tendency. The situation is being further aggravated by poor collections both retail and wholesale, and operations are rigidly curtailed in all fields.

ATLANTIC SEABOARD

BOSTON

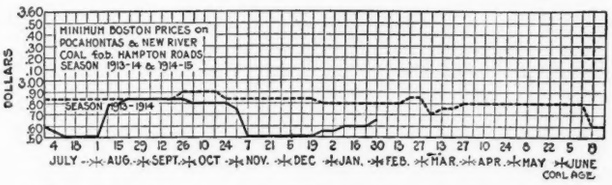
Sharp rise in water freights a new factor in outlook. Less talk of contracts and bulk of coal may this year be sold f.o.b. where prices continue about the same. Georges Creek shippers well supplied with orders.. Pennsylvania grades may have much better outlet all-rail. Anthracite still dull.

Bituminous—Prices f.o.b. Hampton Roads seem no firmer than last week. Coal is coming down in ample volume, and is in fact beginning to again accumulate in a large way. Some of the agencies controlling their own transportation are understood to have closed some season contracts on a delivered basis, but it is probable that from now on, at least until the situation clears, what contracts are made will be on an f.o.b. basis. Buying will not be very free on such a program and a further period of reduced tonnages and dull trade is the outlook for Pocahontas and New River.

The flurry in freights stimulated spot business for a few days but there is now a disposition not to take on coal except as matter of necessity, lest buyers further bid up vessel terms. On-car prices have stiffened in response to conditions along the Seaboard.

The larger shippers of Georges Creek are apparently waiting until they are caught up with orders before they announce a policy with regard to delivered prices. A large proportion of their Tidewater coal is placed in bottoms which they control and it will be interesting to watch developments in that direction. As it looks now, if they name prices at all within reason, they will probably be able to gather in all the business they want.

The outlook is decidedly interesting for operators in Pennsylvania. There is an amount of anthracite-carrying transportation at their disposal but the more promising phase is the broader outlet for these coals all-rail to New England points that are normally reached from rehandling plants at Tidewater. There are mill centers where the Tidewater delivered price cannot be raised too high without throwing the business to Pennsylvania mines for delivery all-rail. Shippers of the better known grades are already actively canvassing for business of this kind.


MINIMUM BOSTON PRICES on POCAHONTAS & NEW RIVER f. COAL f.o.b. HAMPTON ROADS SEASON 1913-14 & 1914-15
DOLLARS
SEASON 1913-1914
JULY AUG. SEPT. OCT NOV. DEC JAN. FEB. MAR. APR. MAY JUNE
COAL AGE

Water Freights are now $1@1.10, Hampton Roads to Boston on large vessels. Several additional schooners have been chartered on a monthly basis off-shore and it is extremely difficult to secure an option on Coastwise boats even for a single trip, so excited are transportation owners over inquiries for over-sea tonnage. Rates from the Chesapeake advanced 25c. within a few days; $10 is rumored to have been paid a sailing vessel to Buenos Aires.

Anthracite continues very dull for the season. All sizes are in easy supply, but the demand is still very light. Dealers are cautious about buying; with the mild weather that still prevails they feel the backbone of winter is about broken. The Boston retailers advanced prices, however, Jan. 19, 25c. on broken, stove, and chestnut, making current prices $7.75 for egg, $8 for stove, and $8.25 for chestnut. The move was more to restore the basis of a year ago than because of any extra demand for fuel.

Wholesale prices on bituminous are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*.....	$0.90@1.50	$1.15@1.65	$1.67@1.77	
Philadelphia*.....	2.15@2.75	2.40@2.90	2.92@3.02	
New York*.....	2.45@3.05	2.70@3.20	3.22@3.32	
Baltimore*.....	.....	.....	2.85@2.95	
Hampton Roads*.	.....	.....	.....	$2.65@2.75
Boston†.....	.....	.....	.....	3.78@3.83
Providence†.....	.....	.....	.....	3.73@3.78

* F.o.b. †On cars.

NEW YORK

Bituminous slowing up still further and the outlook is discouraging. Anthracite situation also becoming worse. Conditions hinging almost entirely on the weather.

Bituminous—The local soft-coal market has seldom ever been so completely flat. Mines as a rule are only producing about 60% of the January output last year. Some slight improvement is noted in railroad circles, though it is so small as to be practically negligible, and it is clear that agencies are crowded for business. In spite of the great activity in shipping, the bunkering trade does not seem so good at the moment, though this business fluctuates to such an extreme that this cannot be regarded as a reliable criterion of the situation.

Negotiations on expiring contracts are now engaging the attention of the sales agencies, and the situation is beginning to shape up. So far operators have apparently succeeded in closing on the same basis as last year. Whether these prices will be held throughout the season depends largely on developments over the next 30 to 60 days.

There are persistent rumors to the effect that the Berwind company is beginning to take active steps toward building up a market in the line trade. It is clear that some disposal must be found for their tonnage, and it is only logical to

expect such a move. It is stated that their mine operations have been increased recently.

The New York market is quotable on approximately the same basis as follows: West Virginia steam, $2.35@2.55; fair grades, Pennsylvania, $2.55@2.65; good grades of Pennsylvania, $2.70@2.80; best Miller Pennsylvania, $3.10@3.15; Georges Creek, $3.15@3.25.

Anthracite—The hard-coal trade has been slowing down to such an extent that complaints are becoming almost as general as in bituminous. Practically all sizes are in easy supply, with the possible exception of Nos. 2 and 3 buckwheat, though plenty of these can be had without any great difficulty.

Unless there is a decided change for the better, it is becoming clear that the large companies are going to carry over large stocks into the summer business. This probably means that this coal will be carried through next winter also, since the companies will no doubt stock heavily against the possibility of a long suspension when the wage agreement expires, a year from next April. The independents are cutting the circular in all directions, and there is only the thinnest pretense of obtaining circular prices.

Restrictions in buying, indicating an economy in consumption, is the feature of the anthracite trade this season. The question of credits is also being more carefully considered. Where sales agents have heretofore allowed consumers long-term payments, this is now being refused with the result that the purchaser is restricting his current requirements to the lowest possible minimum.

The market is quotable as follows:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken	$5.10	$4.60@5.10	$5.05	$4.55@5.05
Egg	5.35	5.10@5.35	5.30	4.80@5.30
Stove	5.35	5.20@5.35	5.30	5.15@5.30
Chestnut	5.60	5.45@5.60	5.55	5.30@5.55
Pea	3.55	3.45@3.55	3.50	3.35@3.50
Buckwheat	2.80	2.70@2.80	2.50@2.75	2.35@2.75
Rice	2.30	2.25@2.30	2.00@2.25	1.80@2.25
Barley	1.80	1.70@1.80	1.75	1.35@1.75

BUFFALO

Still quiet in both anthracite and bituminous. Resumption of wintry weather will help some, but bituminous is reported to be in large surplus Westward. Large amount of anthracite going into Lake vessels.

Bituminous—There is but a small improvement in the trade; some shippers do not see any, and the fear is now that spring prices will have to be lower than they were last spring. This leaves the shipper with the option of tying himself up for a year on low-priced contracts, with the possibility of an active market shortly. There are reports current that there are likely to be 2,000,000 tons of bituminous on the Upper Lake docks when navigation opens in the spring. This is quite different from the report of a few weeks ago, which made it appear that coal was selling so fast Westward that there was likely to be a shortage.

There is not much doing yet in bituminous contracts. The price of bituminous is still rather weak at regular base quotations, $2.80 for Pittsburgh lump, $2.70 for three-quarter, $2.55 for mine-run and $2.15 for slack, with slack somewhat stronger than sizes, but not so scarce as it was a month ago. Allegheny Valley prices remain at 25c. lower than Pittsburgh. There is talk of not giving out these base prices from Pittsburgh this year, partly because it is so difficult in late years to adhere to them and partly because as it looks now they will have to be lowered, which nobody likes to do.

Anthracite—The demand is not strong, even for the time of the year when the first fall clamor is supposed to be past; it is sure to improve with colder weather, though it appears that the consumer has rather more coal on hand than is the rule at this time of the year. Shippers say that when the demand becomes slack in midwinter it is a hard matter to start it up again. The demand for egg is stronger than for stove, with chestnut leading much as it used to before the additional price was put on. All small sizes are quiet, some local dealers offering everything from pea down at a discount.

Coal is still going into Lake vessels on winter storage, though tonnage is hard to get and heavy freezing will make it still more scarce. Shippers who have not taken any tonnage yet are now in the market, so that it looks as if there would be a large fleet ready to move as soon as the Lake season opens.

PHILADELPHIA

General indifference among anthracite consumers. Curtailment still found necessary. All sizes in easy supply. Depressing conditions in bituminous again prevalent.

Anthracite—While this section of the country has been visited with fairly good coal burning weather, the stocks of the dealers are so large that they are in splendid shape to take care of any spasmodic demand that may take place. There is likely to be no active demand at all the balance of the winter, unless there be some exceedingly heavy weather. It will require weeks of low temperatures to create anything like an active market, in the face of the weak condition that now characterizes the trade. Concessions on stove coal are being made by the individual operators in order to move their output, and it is understood that it is commencing to accumulate on the large companies.

The month of January has been a distinct disappointment. It was the general feeling in the trade at the inception of the new year, that the surplus had about been absorbed and the market would support continuous operations at the mines until at least the middle or latter part of February, but such has not been the case. Outside of buckwheat, for which there is more of a sustained call than any of the other steam sizes, the market is distinctly flat, and 50% operations are the rule. Chestnut seems to be in even better shape than stove, just at the present time, although all domestic sizes are inclined to drag.

Prices at Tidewater rule about as follows:

	Circular	Individuals
Broken	$4.75	$4.50
Egg	5.00	4.80@4.90
Stove	5.00	4.90@5.00
Chestnut	5.25	5.00@5.10

Bituminous—The prospective improvement anticipated some two or three weeks ago, has resolved itself into another depressing period. The market at that time showed a marked tendency toward better demand and higher prices, but this has now disappeared. There is still a slight shortage of the Georges Creek coals at Tidewater, but it is understood that sufficient is coming forward to relieve this situation.

BALTIMORE

Warm weather has hurt the trade severely. Coastwise and foreign movement comparatively light.

The week just closed has been a poor one for both the hard and soft-coal business. The temperatures were so high that there was a distinct falling off in the demand for domestic coals. Smaller sizes of anthracite were especial sufferers.

Gas and slack of West Virginia showed particular weakness. The best three-quarter was freely offered at 85c. a ton, while slack sold around 65c. to the trade. West Virginia steam coals of low grade sold at 80c., while select qualities were offering at $1.15 to $1.20. High-grade Pennsylvania coals were selling at $1.25 at the mines to the trade, and ordinary grades at from 95c. to $1.05.

Coastwise movement and foreign business are quite flat as compared with several weeks ago. Italy and Cuba are taking most of the export coal now moving from this port.

While business here just now is most unattractive there are signs of better times ahead. The Maryland Steel Co. has secured contracts to build four large steamships, assuring more activity at that plant. The Consolidation Coal Co. is preparing to float $7,000,000 in bonds for extensions to increase its coal output. The Davis Coal & Coke Co. interests have also announced a financial plan to practically double the output of the mines of that concern.

OCEAN FREIGHTS

Rates still continue their spectacular advance and charters are very difficult to negotiate.

The freight market continues to advance. Owing to the very high rates now offered on sugar from Cuba, it is becoming extremely difficult to secure steamers for coal outward to Cuban or West Indian ports, as owners of the few available steamers state that it pays them better to send them in ballast.

Early last week the British steamer "Auchencrag," about 6000 tons cargo, was chartered in London to load coal at Baltimore for the Plate at $9.60. Numerous boats were offering here for the same voyage at $9 at which rate they are still being offered.

The market is hardly quotable, but approximate prices may be taken as follows:

To	Rate	To	Rate
Havana	**$2.50**	Guantanamo	**$3.00**
Cardenas or Sagua	**3.00**	Demerara	**5.00**
Cienfuegos	**3.00**	Bermuda	3.50@4.00
Port of Spain, Trinidad	**3.25**	Vera Cruz	**3.00**
St. Lucia	3.00@3.25	Tampico	**3.00**
St. Thomas	**3.00**	Rio	**9.60**
Barbados	**3.00**	Montevideo, Buenos Aires or La Plata	**9.00**
Kingston	**3.00**	Mediterranean	**9.60**
Curacao	**2.75**	Valparaiso	7.20@7.50
Santiago	**3.00**		

W. W. Battie & Co.'s Coal Trade Freight Report.
Note—Rates noted in **bold face** type are only approximate.

HAMPTON ROADS

Shipments for week about fair. Export movement poor. Bunker requirements about the average.

Dumpings over the Tidewater piers during the past week have not been as large as expected. Several of the large coasting steamers have been taken off this trade and placed in the general cargo service and a large percentage of the coal moving has been taken care of by sail or barges. The export movement has also been less than the standard. There have been quite a number of foreign vessels in port but they have been calling principally for bunker supply. Of the export coal shipped during the week the greater part has gone to Panama, at least three steamers having been loaded for this port during the week. There has also been some movement to St. Lucia and Italian ports.

Prices are being held at circular but with the large accumulation now at Tidewater it is quite likely that some of the shippers having coal on demurrage will be making some slight cut and it is not believed that even this will create a demand. The general opinion seems to be, however, that market conditions will improve greatly during the coming week.

The bulk of the shipments made during past week has been contract business. Although the accumulation of coal is somewhat above normal, shipments are being made continually from the storage plant at Sewalls Point.

OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
Vinland	Norwegian	Norfolk	Manzanillo	661	
	Norwegian	Virginia	Bermuda		$4.00
Ellen Little		Virginia	Bermuda	807	
Tottenham	British	Philadelphia	Tampico	1998	
Norrbotten	Swedish	Philadelphia	Narvik	3691	
Beacon	Norwegian	Baltimore	Guantanamo	715	2.75
Elizabeth Gilbert		Norfolk	Porto Cabello	482	

Note—Steamers are indicated by **bold face** type, all others being schooners.

OHIO VALLEY

PITTSBURGH

Demand slightly increased all along the line, with mines operating at about 55% of capacity. A twelvemonth contract at $1.25 for ¾-in. coal.

The coal market has shown some further improvement, more important in the fact that it is well distributed than on account of there being any abnormal increase in any particular direction. The domestic demand has been broader, owing to weather conditions, but is still not normal for the season. Demand from manufacturers has shown a slight further increase, particularly in the steel industry, where mill operations have been increasing a very few per cent. per week since the end of December. Railroad demand shows only a very slight increase. A particularly gratifying item to the local coal trade is that a byproduct coke interest in the Northwest has bought some 50,000 tons for quick shipment. Normally this interest depends on lake shipments, taking relatively little during the winter by the all-rail route.

As indicated in previous reports, regular contract business is very light, and contracts for a twelvemonth period are the exception rather than the rule. One such contract, however, for a few carloads a week, has just been closed direct with a consumer at $1.25 for ¾-in. If this were taken to mean that the seller would have given the dealer the usual trimming if the transaction had been made through a dealer the price would be rather a low one; otherwise it may be taken as about representing the market. We quote, subject to some shading for prompt lots, except in the case of slack: Slack, 90c.@$1; nut and slack, $1.05; nut, $1.10; mine-run, $1.15; ¾-in., $1.25; 1¼-in., $1.35, per net ton at mine, Pittsburgh district. The mines are operating at about 55% of capacity, taking the district as a whole.

TOLEDO

Demand only fair. Miners' strike will not affect the local situation. Prices rather weak.

There is little if any change in the coal situation here. The domestic demand is quite low and the steam trade only slightly better. It is believed by all that a really cold spell will result in a heavy run of orders both domestic and steam. The snow has caused no apparent congestion of railroads which has generally been the result of storms in Toledo.

Owing to the slow demand prices have not strengthened although they are holding fairly close to the list. It is not believed that the strike of the miners in this state will make any difference with the general coal situation here. The West Virginia and Kentucky mines make up the shortage easily.

COLUMBUS

A snow storm has caused a firmer tone in the domestic trade. Steam business is still quiet and there is little hope for the future.

Colder weather followed by a heavy fall of snow has stiffened up the local domestic trade and there has been a rush of orders from retailers. Buying was general from all of the territory which looks to Ohio for its coal supply and requests for immediate shipment were frequent.

Prices were not advanced under the better buying but a continuation of present conditions might help in the way of quotations. Retail prices are still firm and there are no signs of a decline. Pocahontas is one of the favorite varieties as well as the West Virginia splints. Hocking lump is selling for $3.50 while there is also a good demand for anthracite.

Production during the past week has not increased to any extent. The Hocking Valley produced about 65% of the average while other fields such as Crooksville, Cambridge and Jackson produced about 50%. Reports from Pomeroy Bend show that the output during the week was about 85% of normal.

Little is doing in the steam trade. Buying on the part of manufacturing establishments is slow and the outlook is not very promising. A considerable amount of the buying for steam use is on the open market. Contracting is slow and many of the users are not renewing their contracts as they expire. One of the best features is the better demand from railroads which appear to have a larger freight movement.

The coke trade is slow in sympathy with steam business.

Prices in the Ohio fields are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump	$1.50	$1.60	.....
Inch and a quarter	1.45	1.50	$1.45
Three-quarter inch	1.35	1.40	1.35
Nut	1.15	1.25	1.15
Mine-run	1.10	1.15	1.10
Nut, pea and slack	0.70	0.75	0.65
Coarse slack	0.60	0.65	0.55

CLEVELAND

Light receipts, demurrage and small demand continue to keep the spot market from advancing. Small amount on consignment. Stocks at Upper Lake docks heavy.

A heavy snow storm over Sunday delayed coal in transit and receipts the first of the week amounted to only about 250 cars or half the usual Monday tonnage. It is not expected much coal will arrive here during the next few days, but the inquiry is not broad enough to make the market brisk. The weather increased the demand for slack, but prices were not advanced.

Three-quarter inch coal from West Virginia, including Fairmont gas, was sold at $1.65 on track here Monday; this was brought in on consignment and was under car service. Fairmont coal netted less than 45c. a ton after paying brokerage. There are only about thirty cars of consignment coal left on the market, twenty-five of which are from West Virginia No. 8 mines. Spot slack sold the first of the week at $1.70 for the best grades. Less desirable kinds sold down to $1.60.

The outlook for an early Lake season is none too bright. Upper Lake docks report a slow movement of steam coals and a fair movement of domestic grades. Duluth-Superior docks, Jan. 15, held 7,000,000 tons of coal and were shipping 24,000 tons a day. The brokers who made the report estimated the stocks on Apr. 15 will amount to 4,000,000 tons as compared with 2,000,000 tons Apr. 15, 1914.

The Lorain Coal & Dock Co. and the Pursglove Maher Coal Co. expect to have properties in the Island Creek, West Virginia district shipping Lake coal and to be able to take care of their lake trade with West Virginia coal of their own mining even if No. 8 field is not working when the season opens. Heretofore these companies have been dependent upon No. 8 for all of their coal.

Quotations for shipment are as follows:

	Pocahontas	Youghiogheny	Bergholz	Fairmont	W. Va. No. 8
Lump	$3.60	.....	.....	.....	.....
Lump, 6 in.	.....	.....	$2.35	.....	.....
Lump, 1½ in.	.....	.....	2.20	$1.95	.....
Lump, 1¼ in.	.....	$2.35	.....	.....	.....
Lump, ¾ in.	.....	2.25	2.10	1.90	$2.05
Egg	3.60	.....	.....	.....	.....
Egg, 6 in.	.....	.....	2.00	.....	.....
Mine run	2.60	2.15	1.90	1.85	1.95
Slack	.....	1.80	1.75	1.70	1.75

CINCINNATI

The persistent pressure on the market has resulted in lower prices. The amount of distress coal increasing in spite of colder weather. Retailers are doing well, but larger buying has not developed.

The retailers have experienced the active business which is the usual accompaniment of wintry weather, but the whole-

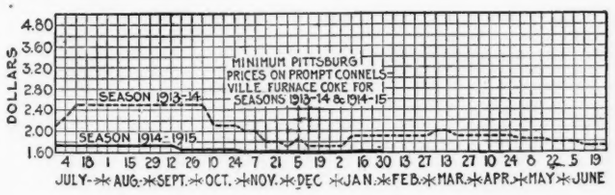
sale market is suffering from the relative slowness in manufacturing lines. Wholesalers and operators' agents find it next to impossible to take care of their outputs, especially in the steam grades, and the effect of this condition has made itself felt in poor prices. Sacrifice prices are commoner than at any time since early December, as the trade is beginning to feel discouraged over the failure of the market to improve, though it is still hoped that the long-expected revival will develop before long.

COKE

CONNELLSVILLE

More receiverships at Uniontown, and no progress toward untangling the Thompson involvement. Prompt furnace coke a shade easier. Production and shipments slightly decreased, but prospects for consumption improved.

Following the closing of the First National Bank of Uniontown Monday of last week and the receivership the following day for Josiah V. Thompson, the famous dealer in Greene County and other coking coal acreage, as reported a week ago, receiverships have been thick in the Fayette County court at Uniontown, and there will probably be others. Mr. Thompson and the majority of his associates are now in the hands of receivers, and at least one coke company, the Tower Hill Connellsville Coke Co., has gone the same route. Mr. Thompson has been endeavoring to straighten matters out, even at a great personal sacrifice, by disposing of a large part of his holdings to capitalists, or to the United States Steel Corporation, but apparently without definite progress thus far. There is a rumor that the steel corporation has offered $18,000,000 for the aggregation. This would, of course, be unacceptable as in the legal papers leading to the receiver Mr. Thompson put his liabilities at $22,000,000 and his assets at $70,000,000.


DOLLARS
4.80
3.60
3.20
2.80
2.40
2.00
1.60
MINIMUM PITTSBURG PRICES ON PROMPT CONNELSVILLE FURNACE COKE FOR SEASONS 1913-14 & 1914-15
SEASON 1913-14
SEASON 1914-1915
4 18 1 15 29 12 26 10 24 7 21 5 19 2 16 30 13 27 13 27 10 24 8 22 5 19
JULY-AUG.-SEPT.-OCT.-NOV.-DEC-JAN.-FEB.-MAR.-APR.-MAY-JUNE

While the situation is of the most serious moment to holders of coking coal acreage the effect on the coke market is hardly likely to be noticeable, as prices were down close to the cost of production, based on a very low rating for the coal in the ground, and sales of late have been chiefly by strong concerns with little bonded or other indebtedness. Prompt furnace coke has softened about 5c. a ton, while it is reported that $1.60 has been paid for delivery over 30 days. There is no doubt that coke could be bought for delivery to Apr. 1 at $1.60, while there is no regular contract market, $1.75 being quotable as nominal, based on sales some time ago. Prompt foundry is $2@2.20 and contract foundry $2.10@2.25, per net ton at oven.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Jan. 16 at 206,850 tons, a decrease of 2752 tons, and shipments at 204,398 tons, a decrease of 12,490 tons. The Carnegie Steel Co. has blown in five additional furnaces within the past week and has used up 21,000 tons from its stock of pig iron, so that the trend seems to be toward increased coke consumption on the part of the steel interests if not by the merchant furnaces.

Buffalo—The demand for coke does not improve. So far as the reports from jobbers go there is no stir in sight and none expected at present. There must be a decided increase in furnace operations before there is need of more coke. Prices remain weak on the basis of $4.25 for best 72-hr. Connellsille foundry and $3.30 for stock coke.

Baltimore—Coke remains an unattractive feature. Connellsville foundry was held at $2.25 and furnace at $1.75. West Virginia foundry sold at $2 and furnace at $1.50.

Columbus, Ohio—The coke trade is slow in sympathy with the steam business.

Birmingham—There is some contract business in foundry coke, but the tonnage is not large. Until conditions improve and foundries resume full operations, no increase is expected.

Chicago—In a general way it may be said that the Chicago coke market is weak. There is a considerable volume of coke reported to be moving, and prices of domestic grades have shown wide fluctuations. Consignment coke has been sold at heavy cuts on the list prices. Prices are as follows: By-product, $4.60@4.95; Connellsville, $4.60@4.80; Wise County 72-hr. (select), $4.60@4.75; gas coke, $4.00@4.25.

THE STEEL INDUSTRY

Situation continues unsatisfactory though there appear to be more resumptions. Some large rail orders are appearing.

On the whole the reports from works give rather a better account of the steel trade than current sales. But it is to be noted that mills have been shutting down and resuming, and that only the resumptions get publicity. The Steel Corporation's report of $10,900,000 earnings in the last quarter of 1914, or $2,500,000 less than the previous low record, in 1904, shows that the last two months of the year were worse than was generally known at the time.

Some further rail orders have been given out—close to 75,000 tons in the West, of which 40,000 tons went to the Colorado mill. The St. Paul and the Rock Island are inquiring for about 25,000 tons. Recent rail orders will give the Gary mill work for two months, and in view of its starting up on Feb. 8 one of the idle blast furnaces there has been blown in. The Steel Corporation is also to blow in this week a furnace at Lorain, Ohio, and two in the Pittsburgh district. Active ingot capacity of the corporation is now close to 50%.

In structural work a somewhat better prospect is indicated. About 37,000 tons is represented in live projects in the East and for track elevation at Indianapolis 20,000 tons will be required.—"The Iron Age."

SOUTHERN

LOUISVILLE

Market continues weak in spite of the colder weather. Steam demand picking up.

Though it was expected that the return of cold weather could be counted upon to improve conditions, the Kentucky coal market is virtually unchanged from a week ago. The industrial demands are said to be improving considerably and prices on those grades are better than they have been. The domestic grades, however, do not show the activity the operators would like to see, the retail dealers still having large stocks on hand.

The highest price being received for any Kentucky coal is $1.85 for high-grade eastern Kentucky lump. Other prices for lump range down to $1.50 while there are reports current of domestic coals on demurrage selling as low as $1.40. Nut and slack from the eastern sections range from 75 to 80c. for the best grades and 45 to 50c. for the lower grades. Low grade western Kentucky nut and slack is going at from 40 to 45c. or thereabouts.

BIRMINGHAM

Steam coal shows some improvement and lump is slightly better.

Steam coal seems to have shown improvement during the past ten days, the demand being some brisker, with prices about the same as for the past month or two. Lump coal shows very little, if any, improvement, many of the producers of this grade having a large tonnage on cars at the mines waiting for orders. On an average, the mines are working about three days per week. Blacksmith coal is normal, business being satisfactory to the operators and prices holding up.

MIDDLE WESTERN

CHICAGO

Stagnation the rule. Prices of Illinois coals spotty, but Indiana grades are held more firmly. Trend of screenings not encouraging. Anthracite situation healthy.

The last week has been more or less discouraging to the Indiana and Illinois trade, and it is quite evident that the demand has shown a decided slump. Although snow and colder weather have made their appearance, stagnation in the movement and demoralization of prices are quite apparent. Production has been curtailed, but not sufficiently to affect prices. Indiana coals show more resistance than the Illinois product.

The stocks of retailers are low, but they are placing very few orders. A number of shippers complain of inability to collect promptly from country dealers, who report that they

are unable to effect collections from the public with any degree of promptness.

There is a great difference of opinion as to the future prices of screenings and steam coals. Apparently there is an over-supply of steam coals on the market at this time, which is mainly the cause for the recession in quotation. The existing uncertainties make a policy of caution wise.

Franklin County operators have reduced their circular on lump, egg and No. 1 nut from $2 to $1.75, and it is said that in a considerable number of cases shipments have been made as low as $1.50. Screenings have declined about 5c. per ton. The situation is about the same in Williamson and Saline Counties.

The production of the Indiana mines is still on a reduced scale, but prices have been maintained on a fairly firm basis. Mines are operating on about a three day basis per week. Block coal shippers in Indiana report a fair demand at good prices.

Eastern Kentucky coals are not very strong, and the fluctuation in prices shows a wide range.

Hocking grades are in the doldrums, and there has been quite an accumulation of unsold coal on hand; $1.50 for lump is about the maximum price.

A few unsold smokeless shipments were sacrificed at low prices this week, but the forwarding of free coal to this center has been restricted and prices are comparatively firm.

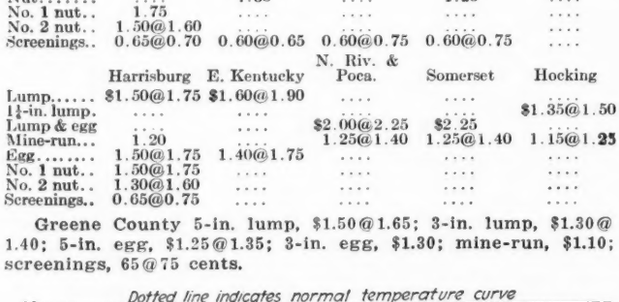
The anthracite situation is in marked contrast to the bituminous. The tonnage absorbed is as great as in any January of previous years. The supply of chestnut hardly equals the demand, and at times there is a small over-supply of egg and stove. Increased shipments from independent operators are noted at prices approximately 15c. per ton under circular.

Prevailing quotations are as follows:

	Franklin Co.	Springfield	Sullivan	Clinton	Carterville
Lump.....	$1.50@1.75	$1.50	$1.50@1.75	$1.50@1.60	$1.50@1.75
4-in. lump..	....	....	....	....	....
Steam lump	....	1.15	....	1.15@1.20	....
2½-in. lump.	....	....	1.50@1.60	....	....
1½-in. lump.	....	....	1.35@1.50	....	....
Mine-run...	1.15@1.25	1.05	....	1.10	....
Egg.....	1.50@1.75	....	....	1.40@1.50	....
No.1washed	....	....	....	....	1.60
No.2washed	....	....	....	....	1.60
6x3-in. egg.	....	1.40@1.50	....	....	1.50@1.60
Nut.....	....	1.35	....	1.25	....
No. 1 nut..	1.75	....	....	....	....
No. 2 nut..	1.50@1.60	....	....	....	....
Screenings..	0.65@0.70	0.60@0.65	0.60@0.75	0.60@0.75	....

	Harrisburg	E. Kentucky	N. Riv. & Poca.	Somerset	Hocking
Lump.....	$1.50@1.75	$1.60@1.90	....	....	....
1¼-in. lump.	....	....	....	....	$1.35@1.50
Lump & egg	....	....	$2.00@2.25	$2.25	....
Mine-run...	1.20	....	1.25@1.40	1.25@1.40	1.15@1.25
Egg.....	1.50@1.75	1.40@1.75	....	....	....
No. 1 nut..	1.50@1.75	....	....	....	....
No. 2 nut..	1.30@1.60	....	....	....	....
Screenings..	0.65@0.75	....	....	....	....

Greene County 5-in. lump, $1.50@1.65; 3-in. lump, $1.30@1.40; 5-in. egg, $1.25@1.35; 3-in. egg, $1.30; mine-run, $1.10; screenings, 65@75 cents.



INDIANAPOLIS

More snow fell just as the trade was expecting a falling off in orders. Buying renewed, both wholesaler and retailer benefiting.

Just as the coal trade was settling down to a duller situation, on account of the milder weather, a heavy fall of snow came, covering nearly the whole state to the average depth of about fifteen inches and accompanied by low temperature. The usual spurt in orders to retailers and wholesalers followed.

The mines are on fair schedule, some of the larger companies operating full time. Prices have not changed, either at the mines or at retail. Slack is in good demand at around 80c. It is expected the snow will have some effect on transportation, especially if the temperature stays around zero. February in Indiana is usually a stormy month and a good one for the coal trade, so the operators are fairly comfortable over the present situation.

ST. LOUIS

Low temperatures and heaviest snows of the season fail to stimulate any business. Steam consumers are apparently well stocked.

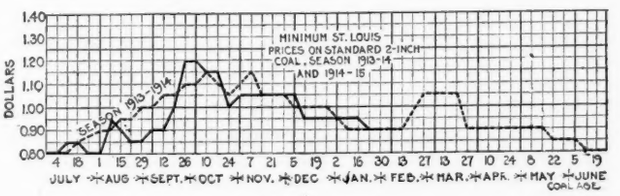
In spite of extremely favorable weather conditions that should bring about a bettering of the market, prices remain the same, and there has been a marked inactivity in the trade. With the heaviest snow of the season and a temperature around zero, prices are the same as they have been for the past two or three weeks, with a tendency to weaken. This applies to domestic sizes, screenings and the steam coals. The slow movement of domestic grades is accounted for by the fact that the retail yards throughout this section are loaded up with contract coal, and there is no open buying. Steam plants are well stocked up and a great many of them are not working at all.

Conditions in the Williamson and Franklin County field have not been as bad at any time since last August. The only strong coal right now is No. 1 washed. In the Standard field coal is sold at the cost of production, and there seems to be no demand even then.

Very little anthracite is moving in, and practically no smokeless. If this weather continues for a week or ten days, the market should be in a healthy condition, as all stocks will have to be replenished. Retail dealers find business exceptionally good on small quantities only.

The prevailing circular is:

	Williamson and Franklin Co.	Big Muddy	Mt. Olive	Standard	Sparta
2-in. lump.....	.....	....	$1.25	$1.00@1.05	$1.05
3-in. lump.....	.....	....	1.30	....	.....
6-in. lump.....	$1.30@1.50	....	1.40	1.15@1.25	1.20
Lump and egg....	1.85@2.15	$2.00	.....	....	1.35
No. 1 nut.....	1.20@1.30	....	.....	0.90@1.00	.....
Screenings.....	0.50@0.55	....	.....	0.40@0.50	0.50
Mine-run.....	0.95@1.05	....	.....	0.85@0.90	.....
No. 1 washed nut.	1.65@1.75	....	1.60	....	.....
No. 2 washed nut.	1.30@1.40	....	....	....	.....
No. 3 washed nut.	1.15@1.20	....	.....	....	.....
No. 4 washed nut.	1.10@1.15	....	.....	....	.....
No. 5 washed nut.	0.40@0.50	....	.....	....	.....


MINIMUM ST. LOUIS PRICES ON STANDARD 2-INCH COAL, SEASON 1913-14 AND 1914-15
SEASON 1913-1914
DOLLARS
1.40
1.30
1.20
1.10
1.00
0.90
0.80
4 18 1 15 29 12 26 10 24 7 21 5 19 2 16 30 13 27 13 27 10 24 8 22 5 19
JULY AUG SEPT. OCT NOV. DEC JAN. FEB. MAR. APR. MAY JUNE
COAL AGE

KANSAS CITY

Demand for coal has been increased somewhat due to the colder weather. Dealers stocking up. No change in prices.

For the second time this season Kansas City has had a touch of winter but the market has not been affected as much as it would have been had this change occurred in a normal winter. It has, however, shown some change for the better. Steam coal is in good demand, though there has been no change in prices. Illinois grades are still strong. Kansas coal is also moving well, but the Missouri product is a little weak. There is a slight prospect for a change in prices about Feb. 1, but this will not occur if the weather should turn warm again.

SPOKANE

The first fluctuation in prices since last winter have occurred. A moderate winter with but one short span of cold weather has in no way depleted the stocks of local dealers. The following standard coals are now holding firm to the prices noted:

Kind of Coal	Cost	Selling	Kind of Coal	Cost	Selling
Rock Springs nut....	$5.50	$7.50	Peacock Rock Springs	$5.50	$7.50
Monarch.....	5.50	7.50	Bear Creek.....	6.50	8.50
Carney.....	5.50	7.50	Kooi	5.50	7.50
Castle Gate.....	6.75	8.50	Kirby nut.....	5.45	7.50
Corbin Steam.....	4.25	4.75	Kirby lump.....	5.85	8.00
Smith.....	6.50	8.50	Kirby egg lump.....	6.35	8.25
Owl Creek.....	6.50	8.50	Bellview steam.....	4.25	5.00

PORTLAND

The possibilities of extending the anthracite trade is looked upon as very favorable with the opening of the Panama Canal and the promised opening of the Celilo Canal in the upper Columbia River next summer. With the completion of the government locks at Celilo it will be possible to reship coal from the ocean steamers here to barges or river steamers for points in the great Inland empire where coal is in much greater demand per capita at the rate of six to one, than in western Oregon by reason of the lack of wood fuel there.

Coal Contracts Pending

Contracts listed in this department are authoritative in every respect except where the source of information is questionable, in which event it is noted. All contracts are listed promptly on receipt and only repeated when additional information becomes available or in the last issue previous to the day on which bids will be closed. Liberal remuneration will be paid for all legitimate notices of this kind sent in.

Contract No. 24—United States Navy—This contract, which provides for coaling naval vessels at 82 different ports (p. 933, Vol. 6), is being held up because of the European war. It is probable that awards may be made covering ports on the east and west coasts of Mexico; but with the uncertainties regarding deliveries at European ports, it is not considered advisable to attempt covering the naval requirements at those points. For the time being coal will be purchased as required without making any advance contracts. Address Paymaster-General, United States Navy, Washington, D. C.

Contract No. 47—Batesville, Ark.—The Municipal Electric Light & Water Plant of Batesville will be in the market for 1800 tons of mine-run coal on Feb. 1. The approximate price is $3.35 per ton, and the coal is bought on a competitive basis, the usual test being the cost of evaporating 1000 lb. of water at the company's boiler plant. Address W. H. Walkup, superintendent, Batesville Water & Light Plant, Batesville, Ark.

Contract No. 49—Harlan, Iowa—The Municipal Electric Light Plant of Harlan will be in the market for 2800 tons of coal about the first of next month. They commonly use Colfax (Iowa) steam coal, and the contract is let on a competitive basis, usually about Feb. 1. Address C. D. Lutton, superintendent, city of Harlan Light Plant, Harlan, Iowa.

Contract No. 60—Detroit, Mich.—Bids on this contract (p. 189), which provides for furnishing the Department of Public Works with its coal requirements for the next year, were as follows:

UNITED FUEL & SUPPLY CO.—For the ash plant, Richwood, ¾ lump, $2.30; mine-run, $2.20; for the B. I. Bridge and Pump Station, Richwood, ¾ lump, $2.85; mine-run, $2.75; anthracite chestnut and stove, $7.20; egg, $7.10; Pocahontas, $4.

THE P. KOENIG COAL CO.—For the ash plant, Meadow Brook, ¾ lump, $2.40; mine-run, $2.30; for the B. I. Bridge and Pump Station, Meadow Brook, ¾ lump, $2.95; mine-run, $2.90; nut, pea and slack, $2.75; anthracite chestnut, $7.50; stove and egg, $7.25; Pocahontas, $3.50.

MICHIGAN BUILDERS SUPPLY CO.—For the ash plant, Cambridge, $2.30; for the B. I. Bridge and Pump Station, Cambridge lump, $4; mine-run, $3.90; anthracite, $8; Pocahontas, $3.40.

R. T. AYLWARD—For the ash plant, Island Creek, $2.50; for the B. I. Bridge, Island Creek, $3.50; for the Pump Station, Island Creek, $3.25; anthracite chestnut, $7.35; stove and egg, $7.25; Pocahontas, $3.85.

J. CALVERT'S SONS—For the ash plant, West Virginia mine-run, $2.50; ¾ lump, $2.60; for the B. I. Bridge and Pump Station, mine-run, $3.24; ¾ lump, $3.34; anthracite chestnut, $7.49; Pocahontas, $4.25.

Address George H. Fenkell, Commissioner of Public Works, City Hall, Detroit, Mich.

Contract No. 64—Columbus, Ohio—The city of Columbus will receive bids until Feb. 4 for furnishing 725 tons of bituminous lump coal. Shipments are to be made at the rate of 200 tons per month, deliveries to be at Columbus, Ohio. Address B. L. Bargar, Director of Public Safety, Columbus, Ohio.

Contract No. 65—Columbus, Ohio—Bids will be received by the city of Columbus for furnishing coal as follows: Twelve thousand tons for the municipal lighting plant; 6000 tons for the Scioto River Pumping Station; 2500 tons for the Garbage Reduction Works; 380 tons for miscellaneous departments of the city government. Bids will be opened Feb. 5. The coal is to be delivered to the various departments as required and each bidder must submit specifications for different grades of coal. The law requires that any corporation making a bid must submit their own full name or title, as well as that of all other parties interested, and all bids must be accompanied by a bond amounting to 50% of the contract.

Contract No. 66—Guantanamo Bay, Cuba—Telegraphic bids were requested by the Naval Department until noon, Jan. 27, for furnishing and transporting 5000 tons of coal to Guantanamo Bay, Cuba. Navy standard coal is required and a daily discharge rate of 300 tons per day is guaranteed. Address Samuel McGowan, Paymaster-General of the Navy, Washington, D. C.

Contract No. 68—Sheridan, Wyo.—Sealed bids will be received until 10 a.m., Feb. 2, for furnishing and delivering coal for one year to the City of Sheridan, commencing Feb. 5, 1915. Address James T. Withrow, County Clk., Sheridan, Wyo.

Contract No. 69—Millvale, Penn.—Sealed bids will be received until 5 p.m., Feb. 2, for furnishing three-quarter or run-of-mine coal for the Millvale Water Works. A certified check of $100 must accompany each bid and the contract requires delivery to be made in bins. William Fox is Pres. of the Borough Council. Address H. H. Dixon, Borough Clerk, Millvale, Penn.

CONTRACTS LET

Contract No. 33—Yonkers, N. Y.—This contract (p. 1009, Vol. 6), which provides for furnishing 300 gross tons of steam coal and 60 tons of nut coal, to be delivered at the bath houses; 250 tons of Scranton pea coal to the crematory; 280 tons of egg coal and 10 tons of steam coal to the City Hall building, has been awarded to Hays & Randolph, Yonkers. Address E. P. Walsh, Secy., Board of Contract and Supply, City Hall Building, Yonkers.

Contract No. 34—Newark, N. J.—This contract (p. 1009, Vol. 6), which provides for furnishing and delivering 800 gross tons of buckwheat coal has been awarded to Joseph H. Lucking, Sussex Ave., Newark, at $3.10 per ton. Address, M. R. Sherrerd, Ch. Engr., Board of Street and Water Commissioners.

Contract No. 39—Youngstown, Ohio—Bids on this contract (p. 39), which provides for furnishing and delivering 20,000 tons of coal f.o.b. cars at the City Water Works Pumping Station, Filtration Plant, and City Crematory, were made as follows:

Name	Run-of-Mine	Nut	Slack	Nut and Slack 1½ In.	Nut and Slack 3 In.	Crusher Mine-Run	Nut and Slack
H. K. Wick & Co.	$1.85	$1.75	$1.62	$1.70*	$1.75	....	....
Youngstown Ice Co.	1.85	1.80	1.50	....	....	$1.98	$1.70
Verner Coal & Coke Co.	1.85	1.80	1.60	....	....	2.15	1.67
Valley Camp Coal Co.	1.70	1.80	1.47	....	....	....	1.65
Pittsburgh Coal Co.	1.90	1.84	1.60	....	....	1.95	1.75
Henderson Coal Co.	....	....	1.60	....	....	1.68	1.65
Youghiogheny & Ohio Coal Co.	1.90	1.90	1.60	....	....	....	1.75

*Contract awarded.

Address H. C. Fox, Clerk, Department of Public Service, Youngstown, Ohio.

Contract No. 42—New York—This contract (p. 108), which provides for furnishing and delivering coal to the College of the City of New York, has been awarded to Meeker & Co., for 1000 tons of No. 1 buckwheat coal and to Pattison & Bowns, for 600 tons of No. 3 buckwheat coal and 200 tons of semi-bituminous run-of-mine. Bids were as follows:

Name	1000 Tons No. 1 Buckwheat Ton	1000 Tons No. 1 Buckwheat Total	600 Tons No. 3 Buckwheat Ton	600 Tons No. 3 Buckwheat Total	200 Tons Semi-Bituminous Mine Run Ton	200 Tons Semi-Bituminous Mine Run Total
John W. Peale	$3.53	$3,530	$2.97	$1,782	$3.95	$7.90
Meeker & Co.	3.28	3,280	3.13	1,878	3.78	7.56
Pattison & Bowns	3.47	3,470	2.39	1,434	3.43	6.86
Charles D. Norton & Co.	3.39	3,390	2.67	1,602	3.75	7.50
Burns Bros.	3.57	3,570	2.80	1,680	3.82	7.64

Address, Curator, College of the City of New York, Room 114, Main Building, 139th St. and Convent Ave., New York.

Contract No. 43—New York—This contract (pp. 108, 189), which provides for furnishing and delivering coal for the Department of Parks, has been awarded to Burns Bros., at

$8797.97. Address Department of Parks, Municipal Bldg., New York.

Contract No. 44—New York—This contract (p. 108), which provides for furnishing and delivering white ash anthracite coal has been awarded to Burns Bros., New York. Bids were as follows:

Amount	Streat Coal Co.	Olin J. Stephens	Burns Bros:	John S. Conabeer	S. Trimmer & Sons, Inc.
150 tons egg.....	$1,084.50	$1,018.50	$1,014.00	$1,042.50	$1,108.50
50 tons egg.....	344.00	325.50	338.00	347.50	369.50
20 tons egg.....	142.60	135.80	135.20	139.00	147.80
20 tons egg.....	142.60	135.80	135.20	139.00	147.80
150 tons pea.....	709.50	700.50	693.00	705.00	724.50
150 tons pea.....	717.00	700.50	693.00	705.00	724.50
Totals.....	$3,140.20	$3,026.60	$3,008.40	$3,078.00	$3,222.60

Address, Mr. McCoy, Contract Clk., Municipal Bldg., Crotona Park, 177th St. and Third Ave., New York.

Contract No. 46—New York—The important bids, including the awards, on this contract (p. 149), which provides for furnishing and delivering white ash anthracite coal, as required, to the various office buildings, clinics, hospitals, day camps and disinfecting stations of the Department of Health, in New York, and at the tuberculosis sanitarium at Otisville, Orange County, N. Y., were as follows:

CLASS NO. 1—For delivering 2000 tons No. 1 buckwheat and 100 tons stove coal at the Willard Parker Hospital: Charles D. Norton Co., $6740; John W. Peale, $6656; George D. Harris & Co., $6160; Meeker & Co., $6728; Pattison & Bowns, $6619 (awarded contract); Commercial Coal Co., $7690.

CLASS NO. 13—For delivering 2500 tons No. 1 buckwheat and 100 tons stove coal to the Riverside Hospital: Charles D. Norton Co., $9117; John W. Peale, $8818 (awarded contract); George D. Harris & Co., $8325; Meeker & Co., $8918; Pattison & Bowns, $9014; Commercial Coal Co., $10,264.

CLASS NO. 21—For delivering 2500 tons No. 1 buckwheat and 75 tons stove coal to the Kingston Ave. Hospital: Charles D. Norton Co., $10,051.25; John W. Peale, $10,367.75; George D. Harris & Co., $9700; Meeker & Co., $10,245; John F. Schmadeke, $9984.25 (awarded contract); Bacon Coal Co., $10,077.50.

CLASS NO. 24—For delivering 250 tons of stove and 250 tons of pea coal to the Riverside Hospital: Meyer Denker, Sinram Co., $2550 (awarded contract); Burns Bros., $2710.

CLASS NO. 26—For delivering 1000 tons of stove and 100 tons of nut coal at the tuberculosis sanitarium, Otisville, N. Y.: John W. Peale, $6985; Pattison & Bowns, $6600; L. R. Wallace, Middletown, N. Y., $6284 (awarded contract).

Address Chief Clerk, Department of Health, Center and Walker Sts., New York.

Contract No. 48—New York—The bids on this contract (p. 149), which provides for furnishing and delivering 15,000 tons of mixed coal at St. George, Richmond, and 6000 tons of mixed coal at 39th St., Brooklyn, were as follows: For 15,000 tons, Geo. D. Harris & Co., $2.84; Chas. D. Norton Co., $2.89; Meeker & Co., $2.97; Gavin Rowe, $2.98; H. H. Lineaweaver & Co., Inc., $2.81; Pattison & Bowns, $2.97; Cullen Transportation Co., $2.75; W. P. W. Haff, $2.83. For 6000 tons mixed coal, Geo. D. Harris & Co., $2.79; Chas. D. Norton Co., $2.89; Meeker & Co., $2.97; Gavin Rowe, $2.98; H. H. Lineaweaver & Co., Inc., $2.81; Pattison & Bowns, $2.97; Cullen Transportation Co., $2.75; W. P. W. Haff, $2.83; John W. Peale, $3.19. Cullen Transportation Co. was awarded the contract. Address T. J. Slattery, Dept. of Docks and Ferries, Pier A. foot of Battery Place, North River, New York.

Contract No. 56—Milwaukee, Wis.—This contract (p. 189), which provides for furnishing 2000 tons of coal to the Menominee special sewerage pumping works, has been awarded to the Milwaukee-Western Fuel Co., 4 Grand Ave., Milwaukee, at $3.70 per ton (14,400 B.t.u.). Other bids were: Pennsylvania Coal & Supply Co., Milwaukee, $3.95 (14,200 B.t.u.); Wisconsin Coal & Dock Co., Milwaukee, $3.97 (14,300 B.t.u.). Address Frederick G. Simmons, Comr. of Public Works, or Percy Braman, deputy, Milwaukee, Wis.

FOREIGN MARKETS

GERMANY AND AUSTRIA

Some acute shortages have developed but the situation is now generally easy. Changes in transportation routes. Austrian government takes over a British colliery in Koenigswart.

East and West Prussia—Before the war the cities of Hamburg, Berlin and the Baltic depended chiefly upon Great Britain for household coals, on account of the better quality and the low ocean freights. These towns are forced now to seek their coal supplies from the Upper Silesian fields and, unfortunately, deliveries were greatly held up by the scarcity of railway transportation. Finally, the requirements of East and West Prussia were filled by shipping the coal down the Oder in barges to Stettin, this means of transportation having been developed a few years ago in consequence of a labor strike.

The Ruhr—This market has reached nearly normal conditins. There is a strong demand from Belgium and Holland which has been met, in part. Low water in the Rhine has affected shipments unfavorably. The demand for anthracite is unusually strong and these coals are scarce. The Syndicate has given notice of an advance of 29c. a ton which took effect, Jan. 1.

Vienna—The middle of November found Vienna facing a coal famine, deliveries from Silesia having fallen off 60% as the railway facilities were taxed to the limit by the military necessities of the campaign in Poland. The municipal authorities obtained an Imperial order forcing the soft-coal and lignite mines of Northwest Bohemia to make good the deficiency, and arrangements were perfected with twenty coal operators, to forward 3000 tons lignite. Further trouble was experienced in Vienna in the house deliveries, about one-half the teamsters having gone to the front; but the absolute wants of all are now being satisfied and the winter's supply is assured. The Britannia Coal Works, Limited, in Koenigswart, has been taken over by the Austrian government, which has appointed a commission to administer its affairs. The capital of the company is 2,568,000 kronen, of which 2,183,000 kronen are owned by John R. W. Griffith, Hendersyde Park, England—"Zeitschrift des Verbandes der Bergbau-Betriebsleiter."

GREAT BRITAIN

Jan. 15—Owing to scarcity of tonnage the position is a little irregular for prompt loading. For forward loading the tone is firm. Quotations are approximately as follows:

Best Welsh steam.....	$4.92@5.04	Best Monmouthshires....	$4.26@4.32
Best seconds.....	4.56@4.68	Seconds.....	4.14@4.20
Seconds.....	4.32@4.44	Best Cardiff smalls.....	3.12@3.24
Best dry coals.....	4.56@4.68	Cargo smalls.....	2.64

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Tonnage is scarce and rates show a further considerable rise. Long delays are still being met with at various discharging ports. Rates are approximately as follows:

Gibraltar.....	$5.04	Naples.....	$7.20	Las Palmas.....	$5.52
Malta.....	6.00	Venice, Ancona...	9.00	St. Vincent.....	5.76
Marseille.....	7.92	Alexandria.....	7.20	Rio Janeiro.....	6.00
Algiers.....	5.52	Port Said.....	7.20	Monte Video.....	5.88
				River Plate.....	6.12

PRODUCTION AND TRANSPORTATION STATISTICS

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for November and the five months of the fiscal years 1913 and 1914, in short tons:

	November				Five Months			
Destination	1914	%	1913	%	1914	%	1913	%
Tidewater.....	246,545	16	255,344	17	1,609,526	17	1,313,390	17
East.....	210,076	13	248.297	16	1,054,787	11	1,029,925	13
West.....	1,057,626	68	891.521	58	6,282,760	66	4,831,363	63
Total.....	1,514,247		1,395,162		8,947,073		7,174,678	
From Connections								
Bituminous.....	41,242	3	133,599	9	543,353	6	561,420	7
Anthracite.....	1,209		1,225		7,753		7,689	
Total.....	1,556,698	100	1,529,986	100	9,498,179	100	7,743,787	100
Coke.....	11,304		28,535		79,670		147,918	

NORFOLK & WESTERN

Destination of shipments over this road for December and the twelve months of last year and the year before were as follows, in short tons:

	December		Twelve Months	
Coal	1913	1914	1913	1914
Tidewater, foreign.....	150,886	108,820	1,542,950	1,904,305
Tidewater, coastwise.....	331,829	255,138	3,805,847	3,763,420
Domestic.....	1,427,236	1,277,207	19,512,118	19,804,243
Coke				
Tidewater, foreign.....	575	1,076	31,082	1,415
Domestic.....	121,379	71,999	1,567,323	1,017,196
Total.....	2,031,905	1,714,240	26,459,320	26,490,580